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# Baby Think It Over(TM): The use of role-play to prevent teen pregnancy.

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***BABY THINK IT OVER™ :***  
**THE USE OF ROLE-PLAY TO PREVENT TEEN PREGNANCY**

by  
Jennifer W. Out

A Thesis  
Submitted to the Faculty of Graduate Studies and Research  
through the Department of Psychology  
in Partial Fulfilment of the Requirements for  
the Degree of Master of Arts at the  
University of Windsor

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1998

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### Abstract

This study examined the effectiveness of a local intervention at modifying attitudes toward teen pregnancy, teen parenting, contraception, and abstinence from premarital sex. As in the study by Saltz, Perry, and Cabral (1994), the premise behind the current study was that teens engage in early and unprotected sex because they believe the “personal fable” concerning pregnancy: “It can’t happen to me.” As a form of role-play, it was expected that participation in the *Baby Think It Over*<sup>TM</sup> program would encourage teens to acknowledge their own personal vulnerability to an unplanned pregnancy, as well as providing them with some insight into the experience of adolescent parenting. One hundred and fourteen adolescents (24 males, 90 females) enrolled in the eleventh grade participated in the study. After 2 to 3 days experience with *Baby Think It Over*<sup>TM</sup>, adolescents in the intervention group were more likely to accurately assess their personal risk for an unplanned pregnancy than teens in the comparison group. No significant differences were observed between the groups on a measure assessing attitudes concerning abstinence from premarital sex and attitudes toward the use of contraception. Qualitative analyses revealed that teens in the intervention group were significantly more likely to produce concrete examples of activities and consequences related to child-rearing than teens in the comparison group. Findings of this study are related to the Health Belief Model and further suggestions for research with *Baby Think It Over*<sup>TM</sup> are discussed.

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## *Baby Think It Over™:*

### **The Use of Role-Play to Prevent Teen Pregnancy**

In the last two decades, health professionals and educators working with adolescents have increased their efforts at both the design and implementation of interventions aimed at preventing teen pregnancy. Despite their efforts, a 20-year study recently released by Statistics Canada showed that the rate of teen pregnancy has been on the rise since 1987. In 1994, close to 24,700 babies were born to teenage women aged 15 to 19 years. These births represented only about half of the 47,800 teen pregnancies that occurred that year, as an estimated 21,000 women in this age group had an abortion, while about 2,000 had a stillbirth or miscarriage that required hospitalization (Wadhera & Millar, 1997).

In 1994, the pregnancy rate in the Windsor and Essex County area among girls 19 years and under was 52.1 per 1000 compared to the Ontario average of 39.6 per 1000 (Ontario Ministry of Health, 1997). Recent increases in the local teen pregnancy rate point to the need for a renewed interest in the development of effective pregnancy prevention programs for Windsor and the surrounding area.

#### **Medical Consequences of Teen Pregnancy**

Research has consistently demonstrated that pregnancy during adolescence has negative consequences for both teenage parents and their children. Pregnant adolescents are at an increased risk for a number of medical complications. The danger of death during or immediately after pregnancy is five times higher in girls under the age of 16

years than for women aged 20 to 24 years, and stillbirths are twice as frequent in adolescent pregnancies (Black & DeBlassie, 1985). Infants born to adolescent mothers are two to three times more likely to die within the first year of life than those born to women aged 20 to 30 years (Babsin & Clark, 1983). Compared to women aged 20 - 24 years, girls aged 17 years or younger were found to be at a higher risk for both preterm birth and delivery of low birth weight infants (Otterblad Olausson, Cnattingius, & Goldenberg, 1997). This risk remained essentially unchanged even after controlling for socioeconomic status. Low birth weight (< 2500 grams) has been shown to be associated with an increased risk of morbidity and mortality during the first year of life (McCormick, 1985).

The increased health risks experienced by infants of adolescent mothers are not simply restricted to complications encountered at delivery (e.g., low birth weight). Researchers have found higher rates of "sudden infant death syndrome" (SIDS) among infants of adolescent mothers than among those of older women (Makinson, 1985). McCormick, Shapiro, and Starfield (1981) found that the rate of injury during the first year of life to be significantly higher among infants of adolescent mothers than among infants of older mothers.

On average, adult mothers tend to seek prenatal care earlier and more frequently than adolescent mothers (Hendry & Shea, 1980). Although the number of postnatal visits was found to be roughly equal for adolescent and adult mothers, teenage mothers tended to take their babies to physicians for specific problems (e.g., crying and feeding problems, accidents, colds, and other minor illnesses) while adult mothers tended to take their infants

to physicians mainly for “well-baby care.” In a sample of 78 adolescent mothers under the age of 19 years, Burke and Liston (1994) found that 29% of the sample did not begin prenatal care until the second or third trimester of their pregnancies even though 95% of the sample reported knowing that they were pregnant during the first trimester.

The health consequences of teen pregnancy are not restricted solely to the female adolescent. Despite a shortage of research available on teen fathers, Resnick, Chambliss and Blum (1993) found that adolescent males involved in one or more teen pregnancies were more likely to engage in "risky health behaviours" than their peers never involved in a pregnancy. Specifically, the researchers found that males involved in adolescent pregnancies were more likely to use drugs and alcohol and to engage in delinquent behaviours than their peers never involved in a pregnancy.

#### Educational and Economic Consequences of Teen Pregnancy

Teen pregnancy has been shown to have an extremely negative effect on the level of educational attainment reached by male and female adolescents. A lack of education severely limits the job opportunities available to adolescents and further increases their risk for a life of poverty. Adolescents who are pregnant are more likely than their nonpregnant peers to drop out of high school and to become dependent on public aid. Pregnancy is the most common reason for female adolescents failing to complete high school. Of adolescent mothers aged 17 years and younger, eight out of every ten do not complete high school (Hechtman, 1989). Upchurch and McCarthy (1990) examined the relationship between timing of a first birth and high school completion using national data from a longitudinal survey of American youth. The researchers found that only 55% of

teens who had conceived a child before the age of 18 years completed high school compared to over 95% of those who had delayed childbearing until after the age of 25 years.

The educational outlook for adolescent fathers is not much better than that of their female partners. Adolescent fathers do not complete as much schooling as their peers who were not involved in a pregnancy. Marsiglio (1986) found that the probability of dropping out of high school for adolescent fathers was twice that of adolescent males not involved in a pregnancy. Only 57% of the teen fathers involved in this study graduated from high school, compared with 87% of the males who had not been involved in a teen pregnancy.

Early childbearing has been shown to be predictive of less prestigious jobs with poor wages and little job satisfaction (Teti & Lamb, 1989). McKay and Austin (1983) found that 85% of their sample of single adolescent mothers in Ontario were on social assistance throughout the first 18 months after giving birth. Those adolescent mothers who were working had incomes averaging well below the poverty line. Approximately 90% of single parent mothers under the age of 25 years were living in poverty in 1993, compared to 58% of single parent mothers aged 25-44 years (National Council of Welfare, 1995).

#### Psychological and Social Consequences of Teen Pregnancy

The psychological and social consequences of teenage pregnancy may not be as obvious as the educational and economic effects suffered by adolescents, but are in many cases just as devastating. In a 1991 study by Hardy and Schwab Zabin (as cited in

Combs-Orme, 1993), a random sample of 389 adolescent mothers were interviewed. The researchers reported a high rate of depression (54%) among the teen mothers in their sample and noted that even higher rates were observed among adolescents with second or subsequent pregnancies. In a recent survey by Witte (1997), feelings of depression and isolation were commonly observed among several teenage mothers who said that they were “missing out” and “losing touch” with their friends who were not pregnant. Many of these adolescent mothers found it difficult to relate to their old group of friends and described feeling very socially isolated from their peers.

Vaz, Smolen, and Miller (1983) found that a significant number of adolescent males involved in pregnancies suffered negative psychosocial consequences such as depression and increased isolation. Similarly, several studies have demonstrated that adolescent fathers frequently have difficulty coping with the knowledge of the pregnancy, showing signs of depression, anxiety, and stress (Elster & Panzarine, 1980; Fry & Trifiletti, 1983; Resnick et al., 1993). The psychological effects of teen pregnancy carry over into young adulthood for many teenage fathers. Buchanan and Robbins (1990) found that young males involved in one or more adolescent pregnancies tended to be more “psychologically distressed” as young adults than their peers who were not involved in an adolescent pregnancy. Greater psychological distress in adulthood was also found in those males whose girlfriends had undergone abortions, as well as those males whose girlfriends has assumed the major parenting responsibility. Similarly, Heath, McKenry, and Leigh (1995) found that men who had fathered a child while in adolescence showed significantly greater rates of depression than men who had first fathered a child during their twenties.



### Traditional Pregnancy Prevention Programs

Most programs designed to prevent adolescent pregnancy focus on one of three approaches: sex education, encouraging sexual abstinence, or increasing the availability of contraception (Saltz, Perry, & Cabral, 1994). Despite the high hopes of health educators, there is conflicting evidence regarding the efficacy of sex education programs in reducing teen pregnancy. In a review of sex education data, Stout and Rivara (1989) concluded that there is little or no effect from school-based sex education programs on sexual activity, contraceptive use, or teen pregnancy rates. According to Stout and Rivara, the studies that were reviewed (Dawson, 1986; Furstenburg, 1985; Kirby, 1984; Marsiglio & Mott, 1986; and Zelnik & Kim, 1982) failed to demonstrate any consistent effect (either positive or negative) that sex education had on altering the age of onset of sexual activity, frequency of sexual activity, patterns of contraceptive use, or rates of teenage pregnancy. In a Canadian study by McKay and Holowaty (1997), 406 adolescents in grades 7 - 12 were surveyed to determine their opinions and self-perceived needs with respect to sex education. Although the vast majority of participants (88.7%) thought it was important for them to receive sex education, less than two thirds of the sample (61.2%) believed that their schools were doing a good job of providing them with adequate sexual health information.

Programs advocating sexual abstinence appear to fare even worse than sex education programs when trying to prevent teen pregnancy. Christopher and Roosa (1990) evaluated the effects of a "Just Say No" program advocating sexual abstinence until marriage. The program consisted of six sessions concentrating on self-esteem,

communication skills, peer pressure, and sexual abstinence until marriage. The researchers found that students participating in the program actually showed an increase in sexual activity when compared to a group of similar students who were not exposed to the program. The authors performed a second evaluation of the abstinence-only pregnancy prevention program and once again found no positive changes in premarital sexual attitudes or behaviours for those students exposed to the intervention (Roosa & Christopher, 1990).

A recent study (Kirby, Korpi, Barth, & Cagampang, 1997) evaluated the efficacy of the Postponing Sexual Involvement Curriculum (PSI), a widely used program in American middle schools that is intended to delay the onset of sexual activity among students. A large sample of 10,600 youths from schools and community organizations in California participated in the study. The primary goal of the PSI curriculum is to delay the onset of sexual activity by helping students to identify social pressures that encourage sexual activity and by teaching students specific skills to resist these pressures. The researchers found no significant differences in the pregnancy rates or contraceptive use between those students participating in the PSI curriculum and those in the control group.

Finally, Dryfoos (1988), in a review of several school based clinics that provided both sex education and contraceptives to students, found that the pregnancy rates at the schools remained the same despite the presence of these clinics. Kirby, Waszak, and Ziegler (1991) reviewed six American school-based clinics that provided a range of medical and counselling services to adolescents, such as physical examinations, treatment of minor illnesses and injuries, personal counselling, and reproductive health services. The

researchers found that although the school-based clinics had varying effects on contraceptive use, none of the clinics had a significant effect on school-wide pregnancy rates. These findings suggest that the provision of contraceptives alone is not sufficient to increase their use among sexually active adolescents.

### Contraceptive Knowledge and Behaviour of Adolescents

The statistics regarding teenage contraceptive knowledge and use are discouraging, at best. Kellor, Duerst, and Zimmerman (1996) cite a recent survey performed by the Alan Guttmacher Institute (1994) which reported that 42% of American teens have had sexual intercourse by the age of 16 years and 71% by the age of 18 years. Similar findings have been reported with Canadian samples. In a nationwide survey of Canadian youth, King, Beazley, Warren, et al. (1988) found that by the eleventh grade 49% of males and 46% of females said that they had experienced sexual intercourse at least once. Despite exposure to sex education and increased availability of contraception, approximately one third of sexually active teens report that they did not use a form of birth control at first intercourse (Forrest & Singh, 1990; Sonenstein, Pleck, & Ku, 1989). In a study by Hillman et al. (1991), 31% of sexually active teens aged 13 - 19 years reported never using birth control, while "occasional use of birth control" was reported by 21% of the sample. Over half of the sexually active teens in a study by Leland and Barth (1992) reported engaging in sexual intercourse when they were drunk or high and close to half of this number admitted that they had failed to use a method of birth control on those occasions.

Although some prior research suggests that teens are adequately informed about

contraception (Mullener, 1987, as cited in Caldas, 1993; Sonenstein & Pittman, 1984; Zelnik, Kantner, & Ford, 1981), the various reasons given for the nonuse of birth control reflect the lack of knowledge that adolescents have about fertility or at least the inability to apply such knowledge to themselves. Many teens cite "time of the month" as a reason for not using contraception but several studies have shown that relatively few adolescents can correctly identify the menstrual cycle phase in which the risk of pregnancy is the greatest. Morrison (1985) examined data from eight surveys in which subjects were asked to identify the period of greatest risk to conceive during the menstrual cycle. Overall, fewer than half of the subjects knew the correct answer.

Many adolescents cite reasons based solely upon myths for not using contraception. Some teens believe that they cannot get pregnant unless they want to, while others believe that they are not risking pregnancy because of the positions that they use during intercourse (Juhasz, Kaufman, & Meyer, 1986; Robinson, 1988; Zelnik et al., 1981). Other common reasons based on misconceptions, given by teens for not using contraception include: *I am (she is) too young to conceive; we didn't have sex frequently enough to conceive; and I didn't believe that I (she) could get pregnant at first intercourse* (Cvetkovich & Grote, 1983; Schwab Zabin & Clark, 1981; Witte, 1997).

### Cognitive-Developmental Approaches to Understanding Adolescent Contraceptive Behaviour

#### Formal Operational Reasoning

Adolescents are becoming sexually active at younger ages. One serious concern is the possibility that many adolescents may be functioning at a cognitive level that makes

them unable to reason effectively about contraception. Traditional programs aimed at preventing teen pregnancy (i.e., sex education, encouraging abstinence, increasing the availability of contraceptives) may have had minimal effects because they do not take into account the developmental characteristics of adolescent thinking. Gilchrist and Schinke (1983) proposed that effective contraception requires specific cognitive and behavioural skills that adolescents often lack.

One of the relatively new approaches being used by researchers involves looking at adolescent contraceptive decision-making from a cognitive-developmental perspective. Gordon (1990) suggested that several elements of Piaget's formal operational reasoning (Inhelder & Piaget, 1958, 1969) can be used to help understand adolescent contraceptive behaviour. These elements include: generating alternatives, evaluating alternatives, engaging in perspective-taking, and reasoning about chance and probability.

According to Piaget, "formal operations" is the name given to the fourth stage of cognitive development, beginning in early adolescence, sometime around the age of 11 or 12 years. During this stage of cognitive development, adolescents develop the ability to think in abstract terms independent of concrete objects. The attainment of formal operational reasoning is not an "all-or-none" event, but rather an ongoing process of change and development. Piaget (1971) acknowledged that the social environment can delay or accelerate the onset of formal operations. Some research has indicated that fewer than 50% of all adolescents demonstrate formal operational reasoning (Rice, 1990).

The first element of Piaget's formal operational reasoning relevant to adolescent contraceptive behaviour is the ability to generate alternatives. During formal operations,

the adolescent gains the ability to think of hypothetical alternatives rather than being exclusively bound to concrete objects of the present. It is also during this time that the adolescent acquires the ability to consider more than one solution for a given problem. The ability to generate alternatives is critical to contraceptive decision-making. Steinlauf (1979) found that the number of unexplained pregnancies in young female adolescents was negatively related to the number of possible solutions generated by participants on a problem-solving test. Teens lacking the ability to generate hypothetical alternatives may be unable to fully consider the range of contraceptive options available to them, as well as the consequences of engaging in unprotected intercourse.

Not only must the formal operational thinker be able to generate alternatives, but he or she must also be able to evaluate the pros and cons of each before deciding on a path of action. Piaget described how formal operational thinkers appear to engage in a sort of "increased planfulness", carefully considering the consequences of various behaviours before any action is taken (Inhelder & Piaget, 1958, 1969). Adolescents who have not yet achieved formal operational thinking may have difficulty evaluating the potential consequences of various forms of contraception, as well as the consequences of unprotected intercourse. Cobliner (1974) has suggested that an "absence of planning" may be the reason why a large percentage of adolescents fail to use contraception during sexual intercourse. In one recent study, researchers attempted to learn why pregnant adolescents failed to use contraception (Stevens-Simon, Kelly, Singer, & Cox, 1996). Several participants reported that they did not use a method of birth control prior to conception because they had not planned on having sex.

Researchers have also found that many teens do not necessarily consider an unplanned pregnancy to be a negative event. Over 50% of the adolescents in a study by Smith, Nenney, Weinman, and Mumford (1982) perceived there to be minimal negative social consequences associated with a teen pregnancy. Approximately 75% of adolescent males in a Canadian study (Redmond, 1985) agreed with the statement that "teenage fatherhood is ok, if the pregnancy is planned and if the couple is willing to care for the child." Henderson (1980), in a study of school aged mothers, found that these mothers did not perceive pregnancy to be a serious consequence of unprotected intercourse. Most of the teens in her sample perceived that the unplanned pregnancy had little impact on their current lifestyles but Henderson noted that these teens also tended to focus on the immediate effects of parenthood while ignoring the long-term consequences.

The third element of Piaget's formal operational reasoning is the ability to engage in perspective-taking. The ability to adopt another's viewpoint develops as children age. Gordon (1990) has suggested that problems with perspective-taking may be largely responsible for adolescents' failure to use contraception. Adolescent females have been found to have difficulty imagining themselves as mothers (Hatcher, 1973). Saltz et al. (1994), in a study examining the effects of role-play on teen's attitudes toward sexual abstinence, asked adolescents to develop scripts about the consequences of teen pregnancy. The researchers found that none of the scripts were concerned with the long-term consequences of adolescent pregnancy (i.e., the responsibility of raising a child). Instead, they found that the scripts developed by the adolescents tended to focus on the immediate social consequences of teen pregnancy (e.g., telling a parent or boyfriend about

the pregnancy). Raising a child was simply something that these teens were unable to envision.

The final element of Piaget's formal operational reasoning relevant to adolescent contraceptive decision-making is the ability to reason about chance and probability. Several studies have found that the probability judgements of adolescents are relatively poor (Ross & DeGroot, 1982; Wavering, 1984) and some researchers have implicated this information as an important factor in sexual risk-taking during adolescence (Cobliner, 1974; Smith, Nenney, Weinman, & Mumford, 1982). Judgements of subjective probability during adolescence begin to approximate objective probability as adolescents get older (Nakajima & Ohta, 1989).

Adolescents' perceptions of pregnancy risk are not always based on accurate knowledge of fertility (Namerow, Lawton, & Philliber, 1987). The perceived probability of pregnancy is not always highly correlated with actual risk of pregnancy. Adolescents who judge their chances of becoming pregnant to be low are less likely to use contraception than those who believe them to be high (Jones & Philliber, 1983). Arnett (1990) found that ineffective contraceptive users were more likely than effective users to view their probability of becoming pregnant as being low.

#### Adolescent Egocentrism: The Imaginary Audience and Personal Fable

Elkind's (1967) concept of adolescent egocentrism has been cited by several researchers to explain sexual risk-taking during adolescence (Arnett, 1990, 1992; Cvetkovich, Grote, Bjorseth, & Sarkissian, 1975; Green, Johnson, & Kaplan, 1992; Holmbeck, Crossman, Wandrei, & Gasiewski, 1994; Johnson & Green, 1993; Saltz et



al., 1994). Early in the development of formal operational reasoning, adolescents acquire the ability to reflect upon their own thinking as well as the thinking of others. Elkind (1967) suggested that it is because of this newly acquired ability, that egocentrism develops:

Formal operational thought not only enables the adolescent to conceptualize his thought, it also permits him to conceptualize the thought of other people. It is this capacity to take account of other people's thought, however, which is the crux of adolescent egocentrism. The egocentrism emerges because, while the adolescent can now cognize the thoughts of others, he fails to differentiate between the objects toward which the thoughts of others are directed and those which are the focus of his own concern . . . Accordingly, since he fails to differentiate what others are thinking about, and his own mental preoccupations, he assumes that other people are as obsessed with his behaviour and his appearance as he is himself. It is this belief that others are preoccupied with his appearance and behaviour that constitutes the egocentrism of the adolescent. (pp. 1029-1030)

Two consequences of adolescent egocentrism (the imaginary audience, and the personal fable) are especially important to consider when trying to understand adolescent contraceptive behaviour. According to Elkind (1967), the imaginary audience results as a consequence of adolescent egocentrism.

One consequence of adolescent egocentrism is that, in actual or

impending social situations, the young person anticipates the reactions of other people to himself. These anticipations are based on the premise that others are as admiring or as critical of him as he is of himself. In a sense then, the adolescent is continually constructing to, or reacting to, an imaginary audience. It is an audience because the adolescent believes that he will be the focus of attention; it is imaginary because, in actual social situations, this is usually not the case . . . When the young person is feeling critical of himself, he anticipates that the audience (of which he is necessarily a part) will be critical too . . . The adolescent's wish for privacy and his reluctance to reveal himself may, to some extent, be a reaction to the feeling of being under the constant critical scrutiny of other people.

(p. 1030)

The sense of being continually evaluated causes the adolescent to be extremely self-conscious. Cvetkovich et al. (1975) have suggested that to prepare for sex by using contraception is to admit to oneself and the imaginary audience a willingness to accept adult sexuality. Embarrassment about going to a physician or pharmacist for contraception has been found to be a significant barrier to contraceptive use for adolescents (Herold, 1981). Of the adolescent females surveyed by Peacock (1982), 47% said that going to a clinic for birth control would be embarrassing, 53% said that going to a private doctor for birth control would be embarrassing, and 61% said that buying foam or condoms in a drug store would be embarrassing. These findings reflect a fear of revealing to others (the imaginary audience) the personal fact of being sexually active.

Holmbeck et al. (1994) reported that adolescents at higher levels of cognitive development had more knowledge about sexuality and contraception, and tended to score lower on an imaginary audience scale than adolescents at lower levels of cognitive development. Those adolescents who reported using contraceptives had lower scores on an imaginary audience scale than did contraceptive nonusers.

The second consequence resulting from the development of adolescent egocentrism is that of the personal fable (Elkind, 1967). According to Elkind, because the adolescent believes that he or she is the centre of attention to the imaginary audience, the adolescent comes to believe that he or she is particularly special and unique and as a consequence, is not governed by the same laws of nature that apply to everyone else:

Perhaps because he believes he is of importance to so many people, the imaginary audience, he comes to regard himself, and particularly his feelings, as something special and unique . . . At a somewhat different level, this belief in the personal uniqueness becomes a conviction that he will not die, that death will happen to others but not to him. This complex of beliefs in the uniqueness of his feelings and of his immortality might be called a personal fable, a story which he tells himself and which is not true. (Elkind, 1967; p. 1031)

The personal fable may account for a variety of adolescent risk behaviours (like unprotected intercourse). *"I thought that I (or my partner) couldn't get pregnant"* has been cited as a common reason by many teens for failure to use contraception and reflects

a belief in the personal fable of invulnerability (Cvetkovich et al., 1975; Robinson, 1988; Rogel, Zuehlke, Peterson, Tobin-Richards, & Shelton, 1980; Schwab Zabin & Clark, 1981).

### The Health Belief Model and Adolescent Contraceptive Behaviour

Katatsky (1977) first proposed that the Health Belief Model (HBM) (Rosenstock, 1974) could be used to help understand contraceptive behaviour. Katatsky's main argument for the use of the HBM to study contraceptive compliance was that it focussed on motivational and cognitive factors in the prevention of health problems. Herold (1983) extended Katatsky's arguments to explain how the HBM could be used specifically to understand contraceptive use among adolescents "for whom motivational factors are more important than lack of knowledge in inhibiting the use of contraception" (p. 19). Due to its focus on motivational and cognitive factors, the HBM is well suited to the study of adolescent contraceptive behaviour from a cognitive-developmental approach.

According to Herold (1983), the HBM assumes that motivation is a necessary condition for action. The two major factors that determine whether or not an individual will be motivated to engage in a particular health behaviour are perceived susceptibility and perceived severity. With respect to adolescent contraceptive behaviour, perceived susceptibility refers to the adolescent's perceived risk of conceiving or of having one's partner become pregnant. Highly egocentric adolescents would tend to evaluate their susceptibility to pregnancy as being low, based on a belief in the personal fable of invulnerability, thinking that "*it can't happen to me.*" Adolescents who have not yet developed formal operational reasoning will tend to be poor estimators of chance and

probability, and as a consequence, may tend to underestimate their chances of being involved in an unplanned pregnancy. Kalmuss (1986) found that the perceived probability of becoming pregnant was the strongest predictor of contraceptive use among female adolescents. Gerrard, McCann, and Fortini (1983) found that ineffective contraceptive users were more likely than effective contraceptive users to view their probability of becoming pregnant as being low.

The second major influence on an individual's motivation to engage in a particular health behaviour is the perceived severity of the health threat in question. The HBM assumes that the more serious a health problem is viewed (in this case teen pregnancy) the more likely one is to engage in actions to prevent it (e.g., contraceptive use, sexual abstinence). Adolescents who have not yet attained formal operational reasoning will have difficulties evaluating alternatives and engaging in perspective-taking. Both of these elements of formal operational reasoning are necessary for the adolescent to adequately assess the seriousness of an unplanned pregnancy. Over half of the teens in a study by Smith et al. (1982) perceived minimal negative social consequences associated with an unplanned teen pregnancy. Holden, Nelson, Velasquez, and Ritchie (1993) found that pregnant teenagers were significantly more likely to expect child rearing to be easier than did nonpregnant adolescents. Several studies have found that the absence of negative attitudes toward childbearing or ambivalent feelings about childbearing are significant predictors of a teen's failure to use contraception and likelihood to conceive (Schwab Zabin, Astone, & Emerson, 1993; Stevens-Simon et al., 1996).

Two other HBM concepts are relevant to the study of adolescent contraceptive

behaviour: the costs and benefits of engaging in the particular health behaviour, and cues to action. According to the HBM, before taking any preventive health action, individuals first weigh the perceived benefits against the perceived costs of taking the proposed action. Herold (1983) pointed out that many health professionals mistakenly assume that almost all women perceive the costs of using contraception to be minimal when compared with the cost of an unwanted pregnancy, but for adolescents who view contraception with apprehension and pregnancy with indifference, this might not be the case. Studies by Lieberman (1981) and Herold and McNamee (1982) demonstrated significant correlations between attitudes toward contraception and contraceptive use. Many teens have negative attitudes toward contraceptive use, believing in some cases that certain forms of contraception (e.g., the Pill) are harmful to a girl's body (Freeman, Rickels, Huggins, Mudd, Garcia, & Dickens, 1980) or that contraception is embarrassing to obtain (Herold, 1981; Peacock, 1982). The benefits for using birth control or remaining sexually abstinent are delayed and for adolescents who have not yet attained formal operations, thinking is often limited to the "here-and-now."

The final factor that may influence an individual's motivation to engage in a particular health behavior is a "cue to action" that stimulates the preventive behavior (Rosenstock, 1974). Cues can be internal (coming from within the individual) or external (coming from others). Herold (1983) suggested that an internal cue such as a delayed menstrual period which can be perceived as a "near miss" would sensitize the adolescent girl to the possibility of pregnancy and motivate her to use effective contraception. External cues can come from parents, peers, educators, and boyfriends. Research

indicates that the adolescent male plays an important role in the contraceptive practices of his female partner. The majority of pregnant adolescents in a study by Allen-Meares (1984) indicated that their boyfriends were the biggest influences upon their sexual behaviour and that their boyfriends had negative attitudes toward contraception. Many adolescents report having friends involved in a teen pregnancy (Jones & Philliber, 1983; Redmond, 1985). It might be easy to assume that adolescents who come into contact with teens who are involved in a teen pregnancy would, after witnessing the negative consequences associated with the pregnancy, be motivated to use contraception or remain sexually abstinent. However, it may be likely that adolescents are only exposed to selective aspects of adolescent parenting (i.e., they witness the increased attention that the adolescent parent initially receives but remain ignorant to the educational and economical problems faced by the new parent, once he/she drops out of school to meet increasing childcare and financial needs).

The HBM has been used in some studies regarding adolescent contraceptive decision-making. Eisen and Zellman (1986) evaluated a 15-hour HBM based sex education program. The researchers found that across specific knowledge areas, HBM attitudes (e.g., perceived severity of the consequences of teen pregnancy) were significant predictors of adolescents' knowledge regarding fertility and contraception. Petosa and Jackson (1991) used HBM concepts to predict adolescents' intentions to adopt safer sex behaviours and found that the model accounted for a significant proportion of the variance in safer sex intentions among the participants.

### The Use of Role-Play to Prevent Teen Pregnancy

The present study was designed with research by Saltz et al. (1994) in mind. These authors performed a study with the goal of developing an intervention that would help teens confront their vulnerability to pregnancy. They employed role-play as a technique to challenge the adolescents' personal fable of invulnerability: *"it can't happen to me."* Studies by Chandler (1973) and Janis and Mann (1965), as cited by Saltz et al., have suggested that role-play can be a useful tool for producing attitude change by increasing perspective-taking skills, personalizing abstract information, and challenging risk denial.

In their study, Saltz et al. (1994) assigned ninth-grade students to one of three conditions: a) video role-play group (adolescents engaged in role-play concerning teens involved in pregnancy dilemmas and videotaped this role-play), b) video viewing group (adolescents watched the videos prepared by their classmates in the video role-play group), and c) control group (adolescents did not participate in either of the previously mentioned groups). The authors predicted that the adolescents who engaged in role-play would be the most likely of the three conditions to express positive attitudes toward abstinence before marriage and would endorse the use of contraceptives for teens who are sexually active. Saltz et al. found that both role-playing the consequences of teen pregnancy and watching videos of friends role-playing significantly increased the favourable attitudes toward abstinence in adolescent girls, but did not significantly influence attitudes toward contraceptive use.

Saltz et al. (1994) did note an important unexpected finding. Adolescents in their



study were permitted to use and develop their own themes for the role-play. Despite instructions to develop stories concerning the consequences of teen pregnancy, none of the stories were concerned with events that took place after the period of first discovering the pregnancy. None of the scripts were concerned with the responsibility of caring for an infant. The authors suggested that these issues were completely outside of the time frame conceptualized by the teens in their study.

### Putting It All Together: The Present Study

The purpose of the current study was to examine an intervention aimed at encouraging the adolescent to acknowledge his or her own personal risk for involvement in an unplanned pregnancy, as well as prompting him or her to consider what type of commitments are involved in adolescent parenting. In an effort to reduce the rate of adolescent pregnancy in the Windsor area, nurses at the city's Teen Health Centre have implemented a program called *Baby Think It Over*<sup>TM</sup> (1994). This program involves the use of "infant simulators" or life-like baby dolls that allow adolescents to role-play the responsibilities involved in parenting. A recent study by Strachan and Gorey (1997) investigated the impact of *Baby Think It Over*<sup>TM</sup> on adolescents' attitudes and beliefs about what their futures might be like as teen parents. After three days with the dolls, 90% of their sample scored higher on a measure of realistic parenting expectations than did the average adolescent in the comparison group.

Several of these infant simulators have been purchased by both the Windsor Public and Separate School Boards and are currently being used in conjunction with parenting programs taught at several high schools within the city. The aim of the present study was

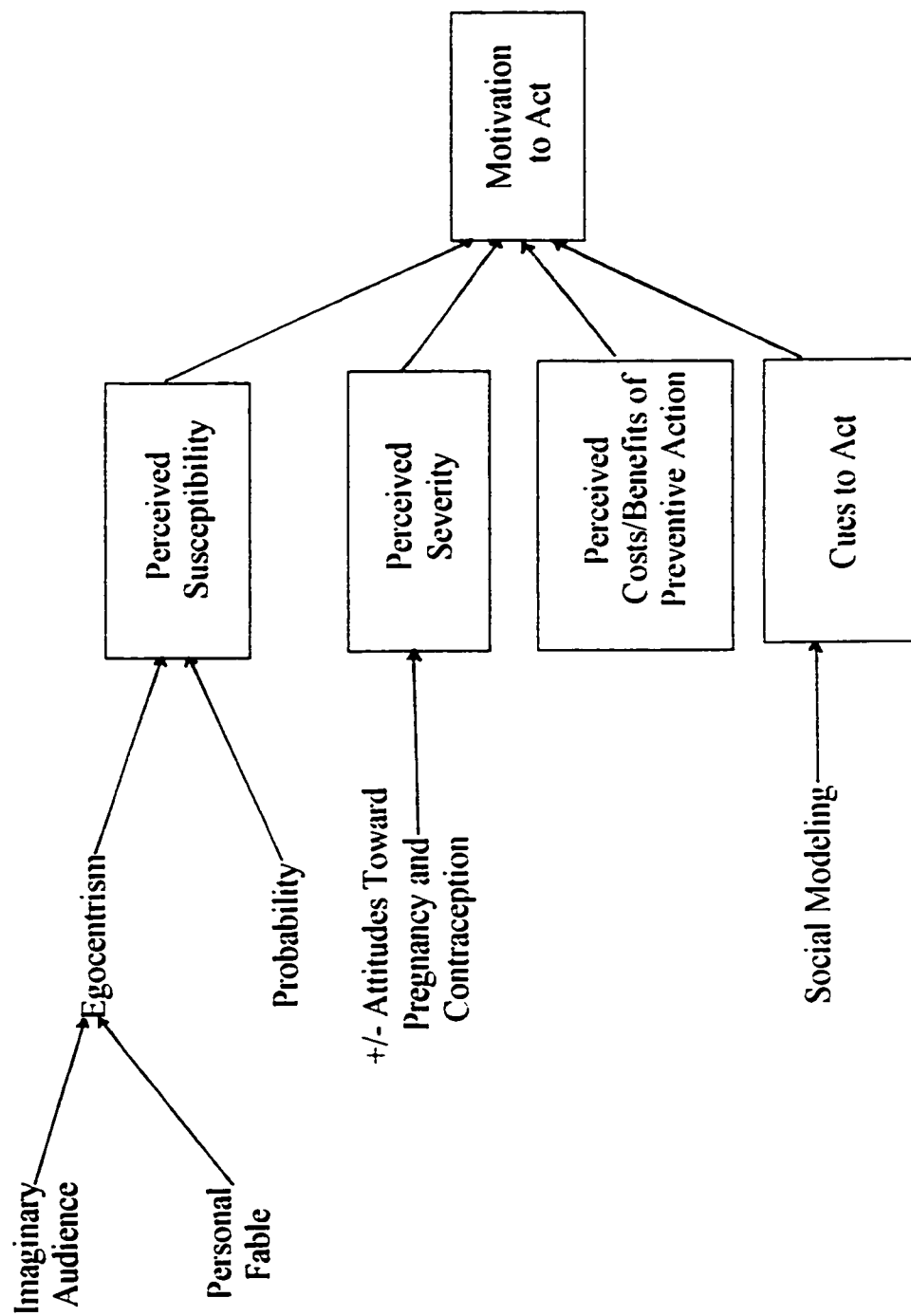
to examine the efficacy of the *Baby Think It Over*<sup>TM</sup> program at influencing teens' perceived susceptibility to pregnancy, as well as their perceptions of the seriousness of an adolescent pregnancy.

According to Gordon (1990), generating alternatives, evaluating alternatives, perspective-taking, and reasoning about chance and probability are all elements of formal operational reasoning needed by the adolescent to effectively reason about contraception and fertility. Gordon pointed out that several innovative programs for pregnancy decision-making involve having the adolescent engage in role-taking tasks such as simulation exercises, babysitting, or carrying around an uncooked egg. Tasks such as role-playing, which concretely enable the adolescent to engage in perspective-taking, may help to stimulate the development of formal operational reasoning in this area. Studies have demonstrated that adolescents have great difficulty projecting themselves into the role of a teen parent (Hatcher, 1973; Saltz et al., 1994). Role-play with an "infant simulator" may help them to envision such a situation.

The intervention group for the present study consisted of students from two area high schools (one separate, one public) enrolled in a parenting class. The comparison group consisted of students from the same schools who have been exposed to neither the parenting classes nor the *Baby Think It Over*<sup>TM</sup> program. The conceptual framework for the current study is depicted in Figure . This framework is based upon the health belief model (Rosenstock, 1974), Piaget's conception of formal operational reasoning (Inhelder & Piaget, 1958, 1969), and Elkind's (1967) notion of adolescent egocentrism.

Perceived susceptibility and perceived severity are two key constructs of the HBM

Figure 1. Conceptual framework for the current study based upon the health belief model (Rosenstock, 1974), Piaget's conception of formal operation reasoning (Inhelder & Piaget, 1958, 1969), and Elkind's (1967) notion of adolescent egocentrism.



expected to be influenced by experience with *Baby Think It Over*<sup>TM</sup> (see Figure 1).

According to the health belief model (Herold, 1983; Rosenstock, 1974), only when the adolescent perceives that he or she is susceptible to being involved in an unplanned pregnancy and only if the adolescent perceives teen pregnancy to be a serious negative consequence of unprotected intercourse, will he or she be motivated to use contraception or abstain from sexual activity. As a form of role-play, it was expected that participation in the *Baby Think It Over*<sup>TM</sup> program would encourage teens to acknowledge their own personal vulnerability to an unplanned pregnancy as well as providing them with an insight into the experience of adolescent parenting.

It was hypothesized that students in the intervention group would report feeling more personally susceptible to pregnancy than those teens in the comparison group, and that teens in the intervention group would be more motivated to abstain from sexual intercourse or to use contraception at next intercourse than teens in the comparison group. It was predicted that a relationship between egocentrism and susceptibility might exist such that highly egocentric adolescents would report feeling less susceptible to an unplanned teen pregnancy than adolescents who are less egocentric.

It was also expected that based on their experience with the infant simulators, adolescents in the intervention group would form more negative attitudes toward an unplanned teen pregnancy than those students in the comparison group. It was believed that adolescents with negative views regarding teen pregnancy would have more favourable attitudes toward abstinence and the use of contraception than adolescents with neutral or positive attitudes toward adolescent pregnancy. Finally, it was expected that

teens in the intervention group would be more likely to be able to provide concrete examples of the demands involved in caring for an infant than those students in the comparison group.

## Method

### Participants

The sample consisted of 116 eleventh grade students from two area high schools (one public and one separate high school). Two students (1.7%) identified themselves as teen parents. Their responses to the questionnaire were not used in further analyses. Overall, 24 males and 90 females participated in the study. Participants ranged in age from 14 to 19 years, with a mean age of 16.2 years ( $SD = 1.02$  years). The intervention and comparison groups consisted of 53 students and 61 students, respectively.

### Materials and Measures

*Baby Think It Over*<sup>TM</sup> (*Baby Think It Over*<sup>TM</sup>, Inc., 1994). Six "infant simulators" developed by Rick Jurmain, an aeronautics engineer in California, were used in the study. Four of these dolls were the property of Windsor Public and Separate School Boards. Two of the dolls were the property of Windsor's Teen Health Centre. Each 20" vinyl doll, weighed seven to eight pounds and contained a battery-operated microcomputer in its back that simulated the realistic cry of an infant during random intervals of 15 minutes to six hours for feeding or care, 24 hours a day. Using the electronics box, it was possible to select from one of three desired baby temperaments: a) "easy" baby, b) "normal" baby, and c) "sick/cranky" baby. "Easy" babies slept from three to six hours at a time, "normal" babies slept from approximately one hour to four hours at a time, and "sick/cranky" babies slept from only 15 minutes to three hours at a time before requiring tending.

The doll cried for several reasons. If the doll was placed in any position other than on its back, on its side, or seated upright, it cried. Unstoppable crying resulted if the doll

was handled roughly. The doll also cried when it required tending ("feeding" or "comforting"). "Feeding" the baby demanded that the adolescent insert a magnetic probe into the doll's back, holding it in place for up to 35 minutes. The probe was attached to a tamper-proof hospital bracelet that was worn on the teen's wrist. Only the assigned teen was able to quiet the doll.

The microcomputer monitored the teen's responses in tending to the baby by recording instances of rough handling or neglect. Rough handling resulted in unstoppable crying for about 30 seconds and caused a red light on the electronics box to blink. Neglect of the doll caused a yellow light on the electronics box to blink. On older versions of the doll, only the yellow light varied in response to the amount of neglect received by the doll. On newer versions of the doll, neglect and abuse were indicated not only by blinking red and yellow lights respectively, but also numerically as the "number" of abuse incidents, "number" of neglect events longer than one minute, and the total number of minutes of crying. Newer versions of the doll contained an anti-tampering circuit that made the electronics box shut down after five minutes if removed outside of the doll. Of the six dolls used in this study, three were older prototypes and three were new versions. A list of parenting instructions for *Baby Think It Over*<sup>TM</sup> is given in Appendix A.

A questionnaire containing items assessing participants' attitudes, behaviours, and knowledge of contraception and fertility, as well as items to assess their general level of cognitive developmental functioning, was used for both the pre- and post-test sessions of the study (see Appendix B). The questionnaire contained the following psychological measures:

Health Belief Model Approach to Adolescents' Fertility Control (Eisen, Zellman, & McAlister, 1992). The Health Belief Model Approach to Adolescents' Fertility Control is a self-administered questionnaire composed of 35 items, grouped to form six subscales: a) susceptibility to pregnancy/VD (3 items); b) serious affective consequences of pregnancy (7 items)<sup>1</sup>; c) serious pregnancy resolution consequences (3 items); d) benefits of effective birth control use (7 items); e) interpersonal benefits of birth control use (5 items); and f) barriers to birth control use (10 items).

Eisen et al. (1992) reported Cronbach's alphas for each of the subscales as follows: a) susceptibility to pregnancy/VD ( $\alpha = .35$ ), b) serious affective consequences of pregnancy ( $\alpha = .65$ ), c) serious pregnancy resolution consequences ( $\alpha = .63$ ), d) benefits of effective birth control use ( $\alpha = .70$ ), e) interpersonal benefits of birth control use ( $\alpha = .73$ ), and f) barriers to birth control use ( $\alpha = .62$ ).

Response categories for all items except items #33, #34, and #35 are based on 5-point Likert type scales with values ranging from 1 = "strongly agree" to 4 = "strongly disagree", and 5 = "unsure." For items #33 and #34 the responses range from 1 = "very worried" to 4 = "not at all worried", and 5 = "unsure." For item #35, the responses range from 1 = "very likely" to 4 = "very unlikely", with 5 = "unsure".

Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraceptives (Saltz et al., 1994). The authors selected items from various measures that would measure attitude domains concerned with personal risk/responsibility and with

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<sup>1</sup> Item #32 was omitted because it was not relevant for this particular sample.



premarital sex. Items measuring these dimensions were sought from scales used in previous studies. Saltz et al. cited a number of studies (Ager, Shea, & Agranow, 1982; Cabral, Handelsman, Weisfeld, & Firestone, 1984; Sorenson, 1973; Steinlauf, 1977) from which items were selected. The resulting measure is composed of 22 items. Fifteen items are answered using a 5-point Likert type scale with values ranging from 1 = "strongly agree" to 5 = "strongly disagree". The remaining seven items are answered using a forced choice (true, false) format. No reliability coefficients nor validity data were reported for this measure. The internal reliability of this and all other measures was assessed in the present study.

Sexual/Contraceptive Behaviours Questionnaire (Johnson & Green, 1993). The Sexual/Contraceptive Behaviours Questionnaire is a measure composed of eight items. Five of the items use a multiple choice format; the remaining three items are open-ended numerical responses. The items were developed to measure sexual/contraceptive behaviours. Sample items include "At this time, are you sexually active?" and "How often do you use birth control when you have sex?" No reliability coefficients nor validity data have been cited for this measure.

New Imaginary Audience Scale (NIAS) (Lapsley et al., 1989). The NIAS is a measure composed of 42 items rated on a 4-point Likert-type scale (ranging from "never" to "often") with respect to how often the individual thinks about the situations described in each item. Sample items include: "rescuing a friend from danger"; "imagining how others would feel if you were gone"; and "being rejected by a boyfriend or girlfriend." The NIAS has a reported alpha coefficient of .92 (Lapsley et al., 1989). Holmbeck et al. (1994)

found that subjects who reported using contraceptives had lower scores on the NIAS than did contraceptive nonusers. High scores on the NIAS represent a heightened sense of the imaginary audience.

New Personal Fable Scale (NPFS) (Lapsley et al., 1989). The NPFS is a forced choice (true, false) measure composed of 46 items that assess feelings of personal uniqueness (13 items), omnipotence (19 items), and invulnerability (14 items). According to Lapsley et al. (1989) omnipotence was defined in terms of having virtually unlimited authority or influence, or as an agent of unlimited power. Sample items include: "I believe that I can do anything I set my mind to"; "I believe no one can stop me if I really want to do something"; and "I think I am better than my friends at just about anything."

Invulnerability was defined in terms of an incapability of being wounded, injured, or harmed. Sample items include: "I can get away with things that other people can't"; and "It is easy for me to take risks because I never get hurt." Sample items for personal uniqueness include: "No one has the same thoughts and feelings that I have"; "I'm somehow different from everyone else"; and "Nobody will ever know what it's like being me." The internal consistency reliability for the full scale is .78 (Lapsley et al., 1989). Lapsley et al. reported positive correlations between scores on the NPFS and scores on the Narcissistic Personality Inventory (Raskin & Hall, 1979, 1981). Some features associated with narcissism include a grandiose sense of self-importance and uniqueness, and a preoccupation with fantasies of unlimited power, success, and beauty.

A fifth measure was constructed to collect background information including the adolescent's age, participation in any sex education classes, prior involvement in a teen

pregnancy, and prior experience with the *Baby Think It Over*<sup>TM</sup> program.

A sixth and final measure was constructed to investigate participants' attitudes and/or expectations regarding parenting. This measure consisted of a single item: "Try to imagine waking up tomorrow morning to find out that you have suddenly become a parent. Identify ways in which your life might be the same or different. Write your answer in the space below." Following this item, the adolescent was asked to rate how difficult it was to imagine himself/herself as a teen parent (1 = easy to imagine, to 4 = impossible to imagine).

#### Procedure

Prior to the start of the study, principals at two Windsor high schools were asked to sign consent forms, allowing the principal researcher to recruit students from the high schools. The principal consent form is provided in Appendix C.

The study consisted of three parts. During the first part of the study, 54 eleventh grade students were recruited through parenting classes offered at area high schools. Students were asked to take home and return signed parental consent forms, as well as student consent forms, before they participated in the study (see Appendix D and Appendix E, respectively). Once these forms were returned to school and given to the principal researcher, students as a group/class were given a questionnaire (under the supervision of the principal researcher) assessing their attitudes, behaviours and knowledge of contraception and fertility, as well their general level of cognitive-developmental functioning. Students were asked to list their date of birth on the questionnaire for the sole purpose of linking pre- and post-test data. To assure

anonymity, students were instructed not to list their names anywhere on the questionnaires. Only the principal researcher and faculty advisor had access to completed questionnaires.

In the second part of the study, students were assigned specific dates ranging from a minimum of two days and two nights to a maximum of three days and three nights (to accommodate weekends) during which time they assumed responsibility for care of the "simulated infant." Prior to receiving the doll, students received detailed instructions both verbally and in print regarding the care of the doll (see Appendix A). Magnetic probes, used to stop the doll's crying, were attached to the student's wrist with tamper proof hospital bands. Upon receipt of the infant simulators, students were asked to provide the principal researcher with a telephone number at which the student could be reached during his or her assigned time to care for the doll. The principal researcher randomly checked in by phone with the student "parent" to make sure that there weren't any significant problems while he or she cared for the "infant."

The third and final part of the study occurred following return of the doll on the assigned date, when the student was once again asked to fill out the same questionnaire that was used during the first part of study. Students were asked to complete the questionnaires in a classroom set aside for use during the study, under the supervision of the principal researcher.

Sixty-two students were recruited through homerooms at both schools to serve as the comparison group. In order to participate in the study it was required that these students have no prior experience with *Baby Think It Over™* nor any prior enrolment in

parenting classes. These participants also received parental consent forms and student consent forms (see Appendix F and Appendix G, respectively). Once these forms were returned to the principal researcher, the students were asked to complete questionnaires identical to those given to the intervention group. Students in the comparison group completed the questionnaires during class time under the supervision of the principal researcher.

Strict confidentiality was maintained at all times throughout the study. Although students were told that they were allowed to skip any questions that they did not wish to answer, they were encouraged to answer as many items as possible for statistical purposes. Students were also informed both verbally and in the student consent form that they could terminate their participation in the study at any time. The questionnaire took approximately 50 - 60 minutes to complete.

Upon completion of their participation in the study, students in both the intervention and comparison groups were debriefed by the principal researcher. The debriefing session took place during a single class. The principal researcher briefly described the purpose of the study and allowed students to ask questions regarding their participation. Copies of a summary of the general findings of the study were made available to principals at both high schools, as well as to the nursing staff at Windsor's Teen Health Centre.

## Results

### Sample Description

The sample consisted of 116 eleventh grade students from two area high schools (one public and one separate high school). Two students (1.7%) identified themselves as teen parents. Their responses to the questionnaire were not used in further analyses. Overall, 24 males and 90 females participated in the study. Participants ranged in age from 14 to 19 years, with a mean age of 16.2 years (SD = 1.02 years). The intervention and comparison groups consisted of 53 students and 61 students, respectively.

Approximately 41.2% of the sample responded “yes” to the question “*Have you ever had sex?*” and at the time of the study the same number of students reported being sexually active. Of those students who reported being sexually active, 83% experienced first intercourse before the age of 16 years. Approximately one-fifth (19.1%) of those students who were sexually active reported using contraception less than half of the time when they have sexual intercourse and only 61.7% reported using some form of birth control at first intercourse.

When demographic variables were analyzed by group, the only significant difference was found for age,  $t(112) = 6.21$ ,  $p < .001$ . Participants in the intervention group (M = 16.75 yrs) were significantly older than those in the comparison group (M = 15.72 yrs). See Table 1 for a breakdown of selected demographic variables by group.

Table 1

Breakdown of Selected Demographic Variables by Group

Demographic Variable	Intervention Group (N = 53)	Comparison Group (N = 61)
Age (years)		
Mean	16.75	15.72
Standard Deviation	1.05	0.71
Males	13.2 % (n = 7)	27.9 % (n = 17)
Females	86.8 % (n = 46)	72.1 % (n = 44)
Have you ever had sex?*		
Yes	45.3 % (n = 24)	37.7 % (n = 23)
No	54.7 % (n = 29)	62.3 % (n = 38)
Did you use contraception at first intercourse? **		
Yes	58.3 % (n = 14)	65.2 % (n = 15)
No	41.7 % (n = 39)	34.8 % (n = 46)
How often do you use birth control when you have sex? **		
Never	8.3 % (n = 2)	13.0 % (n = 3)
25 % of the time	4.2 % (n = 1)	0 % (n = 0)
50 % of the time	8.3 % (n = 2)	4.3 % (n = 1)
75 % of the time	16.7 % (n = 4)	21.7 % (n = 5)
Always	62.5 % (n = 15)	60.9 % (n = 14)

Note. \* The number of sexually active participants in both the intervention and comparison groups is equal to the number of respondents who reported “yes” to the question “*Have you ever had sex?*”. \*\* Percentages for these questions were calculated using only those students who reported being sexually active at the time of the study.

### Reliability of Measures

Alpha reliability coefficients were computed for all dependent measures for both Session 1 (pre-test) and Session 2 (post-test), and are presented in Tables 2 and 3, respectively. Each of the measures demonstrated adequate reliability, with alpha reliability coefficients that ranged from .60 to .93.

### Multivariate Analyses

Repeated-measures multivariate analyses of variance (MANOVA) were performed to determine if differences existed between the intervention and comparison groups on any of the dependent measures across both session 1 (pre-test) and session 2 (post-test). The first MANOVA was performed on the six dependent variables of: susceptibility, affective consequences of pregnancy, resolution consequences of pregnancy, benefits of birth control use, interpersonal benefits of birth control use, and barriers to contraceptive use. These six dependent variables represent each of the subscales comprising the Health Belief Model Approach to Adolescents' Fertility Control Questionnaire. Significant effects were obtained for group,  $F(6, 107) = 3.76$ ,  $p < .01$ , Hotelling's  $T^2 = .20$ , session,  $F(6, 107) = 2.60$ ,  $p < .05$ , Hotelling's  $T^2 = .15$ , and the group by session interaction  $F(6, 107) = 3.55$ ,  $p < .01$ , Hotelling's  $T^2 = .20$ . A post-hoc repeated-measures analysis of variance (ANOVA) revealed that, at session 2 (post-test), participants in the intervention group scored significantly higher on the susceptibility subscale than did those in the comparison group,  $F(1, 112) = 17.88$ ,  $p < .001$  (see Table 4 and Figure 2). No significant differences were noted for any of the other dependent subscales comprising the Health Belief Model Approach to Adolescents' Fertility Control Questionnaire.



Table 2

Alpha Reliability Coefficients, Scale Means, and Scale Standard Deviations for Session 1 (Pre-Test) Dependent Measures (N = 114).

Measure	Alpha	Mean	Standard Deviation	Possible Range
SUSCEPT	.63	10.94	2.14	3 - 14
AFFECT	.60	27.29	2.75	6 - 30
RESOLUT	.62	14.04	1.66	3 - 15
BENEFIT	.70	26.69	5.25	7 - 35
INTER	.75	16.06	4.68	5 - 25
BARRIER	.62	20.70	5.63	10 - 50
ABSTIN	.79	34.58	7.57	9 - 45
CONTRAC	.63	24.73	4.08	6 - 30
NIAS	.93	101.09	22.78	42 - 168
UNIQ	.78	7.62	3.24	0 - 13
INVUL	.64	7.13	2.65	0 - 14
OMNI	.68	7.05	2.68	0 - 19

Note. SUSCEPT, AFFECT, RESOLUT, BENEFIT, INTER, and BARRIER are subscales of the Health Belief Model Approach to Adolescents' Fertility Control Questionnaire. ABSTIN and CONTRAC are subscales of the Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraception Questionnaire. NIAS = New Imaginary Audience Scale. UNIQ, INVUL, and OMNI are subscales of the New Personal Fable Scale.

Table 3

Alpha Reliability Coefficients, Scale Means, and Scale Standard Deviations for Session 2  
(Post-Test) Dependent Measures (N = 114).

Measure	Alpha	Mean	Standard Deviation	Possible Range
SUSCEPT	.66	11.57	2.29	3 - 14
AFFECT	.61	27.22	2.86	6 - 30
RESOLUT	.69	13.86	2.12	3 - 15
BENEFIT	.67	26.17	5.10	7 - 35
INTER	.82	15.67	5.18	5 - 25
BARRIER	.61	20.83	5.76	10 - 50
ABSTIN	.75	34.26	6.89	9 - 45
CONTRAC	.66	24.68	3.92	6 - 30
NIAS	.93	99.44	23.21	42 - 168
UNIQ	.63	7.70	2.42	0 - 13
INVUL	.68	7.05	2.68	0 - 14
OMNI	.76	9.06	3.60	0 - 19

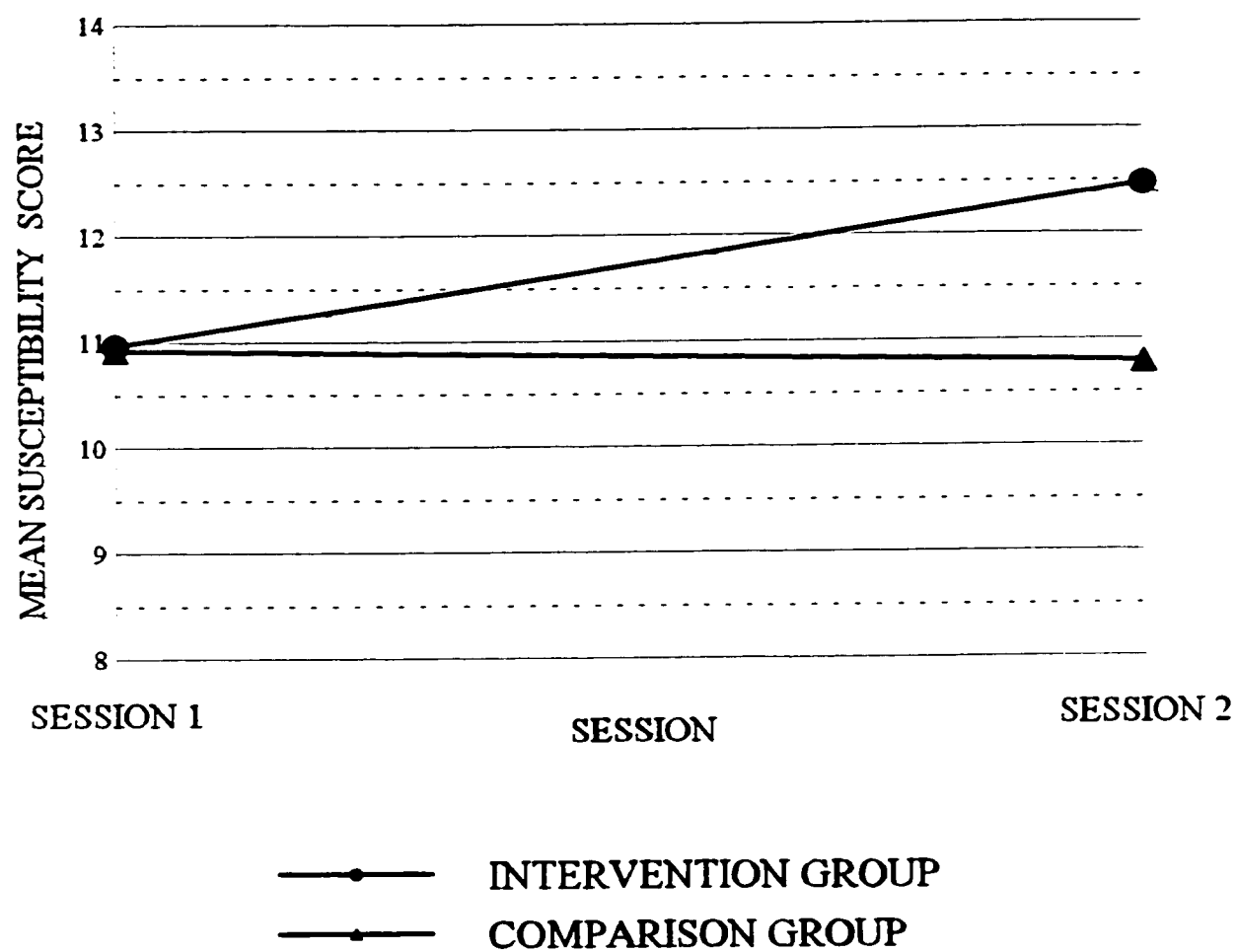
Note. SUSCEPT, AFFECT, RESOLUT, BENEFIT, INTER, and BARRIER are subscales of the Health Belief Model Approach to Adolescents' Fertility Control Questionnaire. ABSTIN and CONTRAC are subscales of the Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraception Questionnaire. NIAS = New Imaginary Audience Scale. UNIQ, INVUL, and OMNI are subscales of the New Personal Fable Scale.

Table 4

Session 1 (Pre-Test) and Session 2 (Post-Test) Group Means and Standard Deviations for Susceptibility.

Group	Session 1 (Pre-test)	Session 2 (Post-test)
Intervention Group (n = 53)		
Mean (SD)	10.96 (2.12)	12.47 (1.67)
Comparison Group (n = 61)		
Mean (SD)	10.92 (2.18)	10.79 (2.47)

**Figure 2.** Mean susceptibility scores for groups across session 1 (pre-test) and session 2 (post-test).



A second repeated-measures MANOVA was performed on the two subscales comprising the measure assessing attitudes concerning abstinence from premarital sex and toward the use of contraception. No significant effects were obtained for group, session, or the group by session interaction. A third repeated-measures MANOVA was performed on the three subscales that made up the New Personal Fable Scale (NPFS): uniqueness, invulnerability, and omnipotence. Once again, no significant effects were obtained for group, session, or the group by session interaction. Finally, a repeated measures ANOVA was performed on scores for the New Imaginary Audience Scale. No significant differences were obtained between the groups or across sessions.

#### Intercorrelations Among Dependent Measures

Pearson correlation coefficients were calculated for each pair of measures. Initially this was done separately for the intervention and comparison groups. Since the groups did not differ globally with respect to correlations on these measures, the groups were pooled and Pearson correlation coefficients were calculated for the entire sample ( $N = 114$ ) as a single group. Intercorrelations among measures for Session 1 and Session 2 appear in Table 5.

Susceptibility was positively and significantly associated with attitudes toward abstinence during both session 1 and session 2 ( $r = .42$ ,  $p < .001$ ; and  $r = .25$ ,  $p < .01$ ; respectively) such that adolescents who reported feeling more personally susceptible to an unplanned teenage pregnancy also reported having more favorable views toward abstinence from premarital sex. Similarly, during session 1 (pre-test), teens who reported feeling personally susceptible to an unplanned teen pregnancy also reported having more positive

Table 5  
Intercorrelations Between Scales for Session 1 and Session 2

Scale	1	2	3	4	5	6	7	8	9	10	11	12
1. SUSCEPT		.31*	.24	-.22	-.18	-.12	.42**	.26*	.09	-.01	-.14	-.18
2. AFFECT	.22		.17	.03	.09	-.14	.15	.14	.18	.04	-.12	-.10
3. RESOLUT	.11	.40**		-.06	-.29*	-.11	.42**	.19	.09	-.06	-.15	-.10
4. BENEFIT	-.09	.24	.13		.65**	-.26*	-.41**	.24	-.07	-.07	.23	.10
5. INTER	-.04	.12	-.18	.56**		-.29*	-.42**	.20	-.14	-.06	.32**	.29
6. BARRIER	-.04	-.38**	-.32**	-.37**	-.14		-.05	-.45**	-.01	.08	-.11	-.02
7. ABSTIN	.25*	-.09	.13	-.32**	-.24*	.03		.23	-.00	.12	-.30*	-.16
8. CONTRAC	.10	-.02	.02	.17	.03	-.31**	.30**		-.14	.03	-.23	-.11
9. NIAS	.10	-.01	.07	-.16	-.10	.11	.03	-.16		.03	-.03	.01
10. UNIQ	-.04	.28*	.19	.03	-.06	-.06	-.05	.02	.02		-.03	-.21
11. INVUL	-.08	.12	.02	.19	.13	-.04	-.33**	-.15	-.29*	.08		.39*
12. OMNI	-.07	.15	.01	.07	.07	.00	-.11	-.06	-.02	-.01	.30**	

Note. Intercorrelations for Session 1 and Session 2 are represented in the upper and lower triangles, respectively. SUSCEPT= Susceptibility to Pregnancy/STDs; AFFECT = Serious Affective Consequences of Pregnancy; RESOLUT = Serious Resolution Consequences of Pregnancy; BENEFIT = Benefits of Birth Control Use; INTER = Interpersonal Benefits of Birth Control Use; BARRIER = Barriers to Birth Control Use; ABSTIN = Attitudes Towards Abstinence from Premarital Sex; CONTRAC = Attitudes Towards Contraceptive Use; NIAS = New Imaginary Audience Scale; UNIQ = Uniqueness; INVUL = Invulnerability; OMNI = Omnipotence. SUSCEPT, AFFECT, RESOLUT, BENEFIT, INTER, and BARRIER are subscales of the Health Belief Model Approach to Adolescents' Fertility Control Questionnaire. ABSTIN and CONTRAC are subscales of the Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraceptives Questionnaire. UNIQ, INVUL, and OMNI are subscales of the New Personal Fable Scale. \* $p \leq .01$ ; \*\* $p \leq .001$ .

attitudes toward the use of contraception ( $r = .26, p < .01$ ).

Surprisingly, feelings of invulnerability were not significantly related to perceived susceptibility during either session 1 or session 2 ( $r = -.14, ns$ ; and  $r = -.08, ns$ ; respectively). Similar nonsignificant findings were observed for the relationship between omnipotence and susceptibility, as well as the relationship between personal uniqueness and susceptibility (see Table 5). Feelings of invulnerability were found to be negatively and significantly associated with attitudes toward abstinence for both session 1 and session 2 ( $r = -.30, p < .01$ ; and  $r = -.33, p < .001$ ) such that teens who reported feeling invulnerable also tended to have more negative attitudes toward the use of contraception.

Across both sessions, a negative and significant association was found between the perceived benefits of contraceptive use and attitudes toward abstinence ( $r = -.41, p < .001$ ; and  $r = -.32, p < .001$ ; respectively) such that teens with positive views toward abstinence tended to perceive fewer benefits associated with contraceptive use than teens with more negative views toward abstinence. There was no significant difference across sessions in the relationship between these variables for sexually experienced teens and their non-sexually experienced counterparts.

Since nearly half (42%) of the participants attended a Catholic secondary school where classroom instruction focused on the promotion of abstinence only, scores on these measures were analyzed further to determine whether or not the absence of any formal classroom instruction relating to contraception had any effect on the relationship between the perceived benefits of contraceptive use and attitudes toward abstinence. Interestingly, a significant relationship between these variables was observed only for those participants

attending the Catholic secondary school. Across both sessions, a significant and negative relationship was found between the perceived benefits of contraceptive use and attitudes toward abstinence ( $r = -.40, p < .01$ ; and  $r = -.38, p < .01$ ; respectively) such that teens at the Catholic school who reported having positive views toward abstinence also tended to perceive fewer benefits relating to contraceptive use. Similar findings were observed for the relationship between the interpersonal benefits of contraceptive use and attitudes towards abstinence (see Table 5).

During session 1 (pre-test), a positive and significant relationship was found between perceptions of the severity of resolution consequences of an unplanned teen pregnancy and attitudes toward abstinence ( $r = .42, p < .001$ ) such that teens who perceived there to be serious resolution consequences with an unplanned pregnancy also tended to hold more positive attitudes toward abstinence from premarital sex. During session 2 (post-test), this finding was nonsignificant ( $r = .13, ns$ ).

Finally, for both session 1 and session 2, a negative and significant association was observed between perceptions of the presence of barriers to effective contraceptive use and attitudes toward abstinence ( $r = -.45, p < .001$ ; and  $r = -.31, p < .001$ ; respectively) such that teens who perceived there to be a number of barriers toward effective contraceptive use also tended to hold positive attitudes toward abstinence from premarital sex.

### Qualitative Findings

During both session 1 (pre-test) and session 2 (post-test), participants were asked to provide responses to the following question: *“Try to imagine waking up tomorrow morning to find out that you have suddenly become a teen parent. Identify ways in which your life*



*might be the same or different. Write your answer in the space below.*” Responses were classified into four categories: child-rearing consequences (e.g., *“I would have to change its diapers and get up at night when it cries”*), educational consequences (e.g., *“It would be hard to study at school during the day because I would be so tired from taking care of the baby”*), economic consequences (e.g., *“I would have to find a job to support the baby and to buy it all the things it would need”*), and social consequences (e.g., *“If I had a baby, I wouldn’t have any time to go out and party with my friends”*). Response frequencies were tabulated for each category by group and are presented in Table 6.

Chi square analyses revealed no significant differences between groups on three of the variables: educational consequences, economic consequences, and social consequences. However, at post-test adolescents in the intervention group produced significantly more examples of child-rearing consequences than did those in the comparison group,  $\chi^2(1, N = 114) = 10.38, p < .01$ . During session 1 (pre-test), approximately 17% of the intervention group and 13.1% of the comparison group listed at least one example of a child-rearing consequence that would occur as a result of an unplanned teen pregnancy. At session 2 (post-test), this number increased to 32.1% for the intervention group but decreased to 8.2% for the comparison group.

Finally, each participant was asked to rate how difficult it was to imagine himself/herself as a teen parent (1 = easy to imagine, to 4 = impossible to imagine). A repeated-measures ANOVA was performed. No significant differences were obtained between the groups or across sessions.

Table 6

Response Frequencies for Consequences of Teen Pregnancy by Group for Session 1 (Pre-Test) and Session 2 (Post-Test).

Consequence	Intervention Group (n = 53)	Comparison Group (n = 61)	$\chi^2$
<u>Session 1 (Pre-Test)</u>			
Child-Rearing	17.0 % (n = 9)	13.1 % (n = 8)	0.33
Educational	20.8 % (n = 11)	31.1 % (n = 19)	1.58
Economical	37.7 % (n = 20)	34.4 % (n = 21)	0.14
Social	45.3 % (n = 24)	54.1 % (n = 33)	0.88
<u>Session 2 (Post-Test)</u>			
Child-Rearing	32.1 % (n = 17)	8.2 % (n = 5)	10.38*
Educational	26.4 % (n = 14)	37.7 % (n = 23)	1.65
Economical	41.5 % (n = 22)	37.7 % (n = 23)	0.17
Social	43.4 % (n = 23)	49.2 % (n = 30)	0.38

\*  $p < .01$

## Discussion

### Adolescent Egocentrism, Perspective-Taking, and *Baby Think It Over*<sup>TM</sup>

The present study examined the effectiveness of a local intervention at modifying attitudes toward teen pregnancy, teen parenting, contraception, and abstinence from premarital sex. As in the study by Saltz et al. (1994), the premise behind the current study was that teens engage in early and unprotected sex because they believe the “personal fable” concerning pregnancy: “It can’t happen to me.” As a form of role-play, it was expected that participation in the *Baby Think It Over*<sup>TM</sup> program would encourage teens to acknowledge their own personal vulnerability to an unplanned pregnancy, as well as providing them with an insight into the experience of adolescent parenting.

It was hypothesized that students in the intervention group would report feeling more personally susceptible to an unplanned pregnancy than those teens in the comparison group. This hypothesis was supported. After 2 to 3 days experience with *Baby Think It Over*<sup>TM</sup>, adolescents in the intervention group were found to be more likely to accurately assess their personal risk for an unplanned pregnancy than teens in the comparison group.

It was also predicted that adolescents in the intervention group would report a greater motivation to abstain from sexual intercourse or to use contraception at next intercourse than adolescents in the comparison group. However, no significant differences were found between the groups on a measure assessing attitudes concerning abstinence from premarital sex and attitudes toward contraceptive use. It should be noted that at pre-test, it was found that both groups already held quite positive attitudes toward abstinence and toward the use of contraception than might otherwise be expected based on the

literature (Freeman et al., 1980; Herold, 1981; and Peacock, 1982) and surveys of adolescent sexual activity (Alan Guttmacher Institute, 1994, as cited in Kellor, Duerst, & Zimmerman, 1996; King et al., 1988). The failure of *Baby Think It Over*<sup>TM</sup> to significantly increase scores on subscales measuring these constructs may have been due to a ceiling effect such that pre-test scores were already close to the upper limits of the range of scores possible on these measures.

The prediction that highly egocentric teens would report feeling more susceptible to an unplanned pregnancy than adolescents who were less egocentric was not supported. In particular, feelings of personal uniqueness, invulnerability, and omnipotence were not significantly related to perceptions of personal susceptibility to an unplanned pregnancy. The tendency to construct imaginary audiences was also found to not be significantly related to perceived susceptibility to an unplanned pregnancy.

These findings are quite unexpected. Because of their imaginary audiences and their beliefs that they are important to so many people, adolescents typically come to regard themselves as special and unique. Some adolescents develop a heightened sense of their own immortality and invulnerability to harm (Elkind, 1967). It was thought that this might be the reason why so many adolescents believe that unwanted pregnancies happen only to others, and never to them. "*I thought that I (or my partner) couldn't get pregnant*" has been cited as a common reason by many teens for failure to use contraception and reflects a belief in the personal fable of invulnerability (Cvetkovich et al., 1975; Robinson, 1988; Rogel et al., 1980; Schwab Zabin & Clark, 1981). It is unclear why a significant relationship was not found between the constructs related to

egocentrism and perceived susceptibility. However, one possibility might be that only at very high levels of cognitive egocentrism do adolescents report feeling invulnerable to harm and less susceptible to an unplanned pregnancy. Mean scores on measures assessing egocentrism were found to lie within the moderate range in the present study (see Tables 2 and 3).

Attitudes toward an unplanned pregnancy were assessed by looking at teens' ratings of the serious affective and resolution consequences of pregnancy. Based on their experience with the infant simulators, it was hypothesized that teens in the intervention group would form more negative attitudes toward an unplanned pregnancy than teens in the comparison group. No evidence was found to support this hypothesis. Across sessions both groups reported having quite negative attitudes toward an unplanned pregnancy. Once again, the failure of *Baby Think It Over*<sup>TM</sup> to significantly increase scores on subscales measuring these constructs may have been due to a ceiling effect such that pre-test scores were already close to the upper limits of the range of scores possible on these measures.

It was also predicted that adolescents with negative views regarding teen pregnancy would report having more favourable attitudes toward abstinence and the use of contraception than adolescents with neutral or positive attitudes toward teen pregnancy. Although prior studies have found that the absence of negative attitudes toward childbearing or ambivalent feelings about childbearing are significant predictors of a teen's failure to use contraception and her likelihood to conceive (Schwab et al., 1993; Stevens-Simon et al., 1996), this hypothesis was only partially supported in the present

study. During session 1 (pre-test) perceptions of serious resolution consequences of pregnancy were significantly and positively related to attitudes toward abstinence from premarital sex. In other words, teens with more negative attitudes toward an unplanned pregnancy were more likely to have positive views toward abstinence. This relationship was not observed in session 2 (post-test). No significant relationships were observed between views toward an unplanned pregnancy and attitudes toward the use of contraception.

Finally, based on their experience with *Baby Think It Over™*, it was predicted that teens in the intervention group would be more likely to be able to provide concrete examples of the demands involved in caring for an infant than those students in the comparison group. Qualitative analyses revealed that teens in the intervention group were significantly more likely to produce concrete examples of activities and consequences related to child-rearing than teens in the comparison group. Examples of child-rearing consequences included: *I wouldn't get much sleep because I'd have to get up in the middle of the night to look after the baby when it cries; I'd have to take the baby with me everywhere because I'd be the one responsible for looking after it; and I would need to get up earlier in the morning to make the baby's breakfast.*

During session 1 (pre-test) approximately 17% of the intervention group and 13.1% of the comparison group listed at least one example of a child-rearing consequence that would occur as the result of an unplanned teen pregnancy. At session 2 (post-test), this number increased to 32.1% for the intervention group but decreased to 8.2% for the comparison group. No significant differences were found between the number of

educational, economic, and social consequences of teen pregnancy listed by participants in each group.

As discussed previously, adolescents are typically focussed on the present. They often have great difficulty engaging in hypothetical thinking and envisioning the future consequences of their present behaviour. Henderson (1980) found that when teens in her sample reported that an unplanned pregnancy had little impact on their current lifestyles, they also tended to focus on the immediate effects of parenthood while ignoring the long-term consequences. As a form of role-play, *Baby Think It Over*<sup>TM</sup> provided teens with direct exposure to some of the activities related to childcare and as such, it makes sense that teens in the intervention group were able to come up with more concrete examples of the consequences relating to childcare than those teens in the comparison group.

However, it may be likely that the adolescents in the intervention group were only exposed to selective aspects of adolescent parenting (i.e., they witness the increased attention that the adolescent parent receives but remain ignorant to the long term educational and economical problems faced by new parent, as he/she struggles to meet increasing childcare and financial needs). This could explain why no significant differences were found between the number of educational, economical, and social consequences listed by teens in the intervention and comparison groups. Very few adolescents in either of these groups were able to come up with one consequence for each category. At post-test, most of the participants still indicated that they found it very hard to imagine themselves as teen parents.

The Health Belief Model and *Baby Think It Over*<sup>TM</sup>

Katatsky (1977) first proposed that the Health Belief Model (HBM) (Rosenstock, 1974) could be used to help understand contraceptive behaviour. Herold (1983) extended Katatsky's arguments to explain how the HBM could be used specifically to understand contraceptive use among adolescents "for whom motivational factors are more important than lack of knowledge in inhibiting the use of contraception" (p. 19). According to Herold, the HBM assumes that motivation is a necessary component for action. The two major factors that determine whether or not an individual will be motivated to engage in a particular health behaviour are perceived susceptibility and perceived severity. With respect to adolescent contraceptive behaviour, perceived susceptibility refers to the adolescent's perceived risk of conceiving or of having one's partner become pregnant. Furthermore, the HBM assumes that the more serious a health problem (e.g., unplanned pregnancy) is viewed, the more likely one is to engage in actions to prevent it (e.g., contraceptive use, abstinence from premarital sex). In order to assess the severity of the health problem in question, it is necessary to be able to engage in perspective-taking.

Gordon (1990) has suggested that problems with perspective-taking may be largely responsible for adolescents' failure to use contraception. Adolescents in the present study seemed to have been weak in their ability to engage in perspective-taking. As previously noted, most participants were unable to list a significant number of consequences related to adolescent parenting. Many of the consequences that they did provide dealt with concrete examples related to childcare. Very few were able to list examples of the long-term consequences related to the educational, economic, and social



problems faced by teen parents.

As a form of role-play, *Baby Think It Over*<sup>TM</sup> enabled adolescents to better imagine what their lives might be like as teen parents, despite their limited abilities to engage in perspective-taking. After 2 to 3 days experience with the dolls, teens in the intervention group were more likely to accurately assess their personal risk for an unplanned pregnancy, and to provide concrete examples of child-rearing consequences than teens in the comparison group. A significant and positive relationship was found between susceptibility and abstinence such that teens feeling more personally susceptible to an unplanned pregnancy were more likely to hold more positive views toward abstinence from premarital sex than those teens feeling less susceptible to an unplanned pregnancy. Similarly, a significant and positive relationship was found between susceptibility and attitudes toward contraceptive use such that teens who reported feeling more susceptible to an unplanned pregnancy also reported having more positive views toward the use of contraception.

Two other HBM concepts relevant to the study of adolescent contraceptive behaviour are estimations of the costs and benefits of engaging in a particular health behaviour, and “cues to action” that stimulate the preventive behaviour (Rosenstock, 1974). A significant and negative relationship was found between attitudes toward contraception and perceptions of the barriers involved in the use of contraception such that teens with more positive attitudes toward contraception perceived there to be fewer barriers toward the use of effective contraception than teens with more negative views regarding contraceptive use. Significant and negative correlations were also found between attitudes toward abstinence and perceptions of the benefits (global benefits and

interpersonal benefits) involved in contraceptive use, such that teens with positive attitudes toward abstinence were less likely to hold perceptions that contraceptive use could benefit a relationship or protect them from an unplanned pregnancy. Interestingly, it seems that teens who value abstinence from premarital sex tend not to engage in assessments of the benefits associated with contraceptive use. For these teens, it appears that contraceptive use is not an option.

As mentioned previously, nearly half (42 %) of the sample attended a Catholic secondary school, where classroom instruction focussed on the promotion of abstinence only. Scores on the measures relating to perceptions of the benefits associated with contraceptive use and attitudes toward abstinence were analysed further to determine whether or not the absence of any formal classroom instruction relating to contraceptive use had an effect on the relationship between these variables. Across both sessions, a significant and negative relationship was found between the perceived benefits of contraceptive use and attitudes toward abstinence such that teens at the Catholic school who reported having more positive views toward abstinence also tended to perceive fewer benefits associated with contraceptive use. However, no significant relationships between these variables were reported for students recruited from the public secondary school. Similar findings were observed for the relationship between the interpersonal benefits of contraceptive use and attitudes toward abstinence. These findings do suggest that the relationship between the perceived benefits of contraceptive use and attitudes toward abstinence may have been confounded by the absence of classroom instruction related to contraceptive use at the Catholic secondary school.

Experience with *Baby Think It Over*<sup>TM</sup> as well as enrollment in parenting and/or sex education classes are relevant cues to action that would stimulate preventive behaviour. Cues to action can be internal (coming from within the individual) or external (coming from others). Direct experience with *Baby Think It Over*<sup>TM</sup> can be thought of as an internal cue that sensitizes the adolescent to the possibility of pregnancy. Caring for *Baby Think It Over*<sup>TM</sup> can be quite demanding. The adolescent must attend to the needs of the doll (e.g., random crying, positioning etc.) and also be able to coordinate the doll's care with his/her own needs. This can be quite stressful for many teens. However, this increased pressure or stress may be the internal cue that motivates the teen to consider preventive measures against an unplanned pregnancy.

Curricula that involve the discussion of issues related to parenting, contraceptive use, and/or abstinence can be thought of as an external cue to action that would motivate the teen to consider his or her own personal susceptibility to an unplanned pregnancy. Although the magnitude of the effect was not as great as for those teens directly involved in caring for the dolls, Strachan and Gorey (1997) found that over time, teens who merely observed their classmates tending to *Baby Think It Over*<sup>TM</sup> also demonstrated more realistic notions about the demands involved in the of parenting an infant. Similarly, Saltz et al. (1994) found that both role-playing the consequences of teen pregnancy and watching videos of friends role-playing significantly increased the favourable attitudes toward abstinence in adolescent girls. Similar findings were not obtained in the current study, however it is important to note that it was not possible to determine how much exposure (as observers) students in the comparison group had to *Baby Think It Over*<sup>TM</sup>,

since several students in the intervention group also attended classes with students in the comparison group.

### Limitations and Implications for Further Research

The current study has three main limitations that should be kept in mind when considering the effectiveness of *Baby Think It Over*<sup>™</sup> program. First, it should be noted that the findings are not readily generalizable to adolescent males, since males comprised less than a quarter of the sample (24 males, 90 females). The parenting classes at both schools were not required courses. Students had the option of enrolling in them to fulfill a social science credit. It is possible that a self-selection bias existed such that teens enrolled in the parenting classes were more interested in these issues than those teens who opt against taking these courses. In the present study, males comprised only 13.2 % of the intervention group. Several of the teen males expressed concerns that they would be teased and harassed by their friends for taking what they consider to be a “girl course.” Further research related to *Baby Think It Over*<sup>™</sup> should involve more adolescent males and it should also be designed in such a way as to determine whether or not male teens have any unique concerns or attitudes relating to their perceived susceptibility to an unplanned pregnancy, perceptions of teen parenting, attitudes toward contraception, and views concerning abstinence from premarital sex. Additionally, future research should be aimed at examining the impact of *Baby Think It Over*<sup>™</sup> on adolescents who may not be particularly interested in or motivated to learn about teen parenting, or issues related to contraception and abstinence.

Secondly, the long term stand-alone effectiveness of the *Baby Think It Over*<sup>™</sup>

program cannot be determined from this study. Throughout the Windsor area, *Baby Think It Over*<sup>TM</sup> is used only in conjunction with parenting classes. The curricula of these classes vary considerably from school to school and even from instructor to instructor within the same school. Ideally, future research examining the effectiveness of this intervention should try to study *Baby Think It Over*<sup>TM</sup> in isolation, however this is likely impossible. Instead, pilot studies should be performed to ensure the pre-test equivalence of the curricula of the parenting classes involved in the study. Another way to determine the long-term effectiveness of *Baby Think It Over*<sup>TM</sup> would be to employ a research design that would involve the use of the following three groups: one group composed of students taking a sex education and/or parenting course with the use of *Baby Think It Over*<sup>TM</sup>; one group composed of students taking a parenting course only, and one comparison group of students who do not have any interaction with *Baby Think It Over*<sup>TM</sup> and who are not enrolled in a parenting course.

Finally, previous studies have found that the mere observation of adolescents role-playing the consequences of teen pregnancy was enough to induce some significant attitude changes. In the present study it was not possible to determine whether or not *Baby Think It Over*<sup>TM</sup> had any significant effects on teens who simply observed their classmates caring for the dolls. Although it was not determined how much exposure (as observers) students in the comparison group had to *Baby Think It Over*<sup>TM</sup>, it was noted that several students in the intervention group also attended classes with students in the comparison group. Because the amount of exposure was not controlled, any findings relating to effects of *Baby Think It Over*<sup>TM</sup> on observers are inconclusive. Future research should be designed in

such a way as to segregate the comparison and intervention groups (perhaps by having each at a different school) and to add an additional group that would receive controlled exposure to *Baby Think It Over*<sup>TM</sup> (this could be done by monitoring the amount of contact students in this group would have with those students providing direct care for the dolls).

#### Implications for Increasing the Efficacy of *Baby Think It Over*<sup>TM</sup>

The manufacturers of *Baby Think It Over*<sup>TM</sup> intend this product to be used as an aid for educators, doctors, and other professionals to help adolescents make responsible, informed choices about parenting. Based on the results of this study, *Baby Think It Over*<sup>TM</sup> appears to be effective at enabling teens to gain some insight into the demands involved in becoming a teen parent. However, this insight was found to be somewhat limited. Although teens in the intervention group were able to provide significantly more examples of child-rearing consequences than teens in the comparison group, overall, adolescents in the present study seemed to have been weak in their ability to engage in perspective-taking. Very few teens were able to list examples of the long-term consequences related to the educational, economic, and social problems faced by adolescent parents.

There are some suggestions for ways to increase the efficacy of *Baby Think It Over*<sup>TM</sup> at modifying attitudes toward teen pregnancy, teen parenting, contraception, and abstinence from premarital sex. First, educators need to look at new ways to encourage teens to imagine and understand the long-term educational, economical, and social consequences of adolescent parenting. One suggestion is that information related to adolescent parenting and teen pregnancy be incorporated into the content of other nonparenting courses. For example, math or economics teachers could assign students the

task of estimating the costs associated with the care of an infant. Physical education teachers could focus on the importance of pre- and postnatal fitness. History and sociology teachers could incorporate lessons that discuss parenting throughout history and changes in attitudes toward teen pregnancy or single-parent families.

Secondly, although *Baby Think It Over*<sup>TM</sup> may provide a reasonably realistic simulation of parenting, there are significant differences between it and a real infant. Teachers of parenting classes should emphasize these differences in great detail so that teens become aware of the endless demands involved in parenting. Adolescents need to be fully aware of the fact that the care of a real infant is much more demanding than dealing with *Baby Think It Over*<sup>TM</sup> for a few days. Teen parents could be brought into parenting classes to discuss the impact that having a baby has made on their lives.

As a form of role-play, participation in the *Baby Think It Over*<sup>TM</sup> program has encouraged teens in the present study to acknowledge their own personal vulnerability to an unplanned pregnancy, and has provided them with an insight (although somewhat limited) into the experience of adolescent parenting. Several suggestions have been made for increasing the efficacy of this intervention. It is believed that with continued development by its manufacturers and incorporation into more traditional classes, *Baby Think It Over*<sup>TM</sup> may help adolescents to make responsible, informed choices about parenting. However, increases in the local teen pregnancy rate still point to the need for a renewed interest in the development of effective pregnancy programs for Windsor and the surrounding area. It is hoped that continued research on this and other similar interventions may provide information that will help educators and health professionals to

design programs that will force adolescents to acknowledge the long-term consequences associated with adolescent parenting.



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## APPENDIX A

### ***Baby Think It Over*<sup>TM</sup>** **Instructions for the “Parent”**

#### **Introduction**

Congratulations! You're a parent! For the next \_\_\_\_ day(s), you will be responsible for taking care of your “baby”. *Baby Think It Over*<sup>TM</sup> is an “infant simulator” designed to help you understand what it is like to be the main caregiver of a baby. Of course, it can't do everything a real baby can do. Probably the biggest differences are that *Baby Think It Over*<sup>TM</sup> does not wet/soil his/her diapers and does not laugh, smile, or coo at you when he/she is happy. The only form of feedback your baby can give you is his/her crying. When your baby cries, you will know it needs something. It's your job to determine what type of care he/she needs and provide it quickly, day or night.

You will be monitored by your teacher on how well you care for your baby. Your teacher can explain how the monitoring is done. You will be given a plastic probe for “feeding” or “tending” your baby when he/she cries. The probe may be strapped to your wrist with a tamper-proof armband to make sure that you are the only one who feeds the baby (unless your teacher has give prior approval and provided an extra probe to someone else)\*\*. This means that you must keep the baby with you at all times in case he/she needs care.

**\*\* Note:** Under certain circumstances the student may need to use a “sitter” (Your teacher will discuss these circumstances with you). In order to arrange for a sitter, you must see your teacher to sign out an additional probe for a specified amount of time (not to exceed 2 hours).

#### **Why Your Baby Cries**

Real babies cry for many reasons. They may be hungry, wet, sick, or just want attention. *Baby Think It Over*<sup>TM</sup> will cry for only four reasons:

- (1) He/she does not like the position you have placed him/her in.
- (2) He/she needs tending.
- (3) He/she is being tended but wants to go to sleep.
- (4) He/she has been handled too roughly.

These are the reasons for the baby's crying, and how you should respond to them are listed below.

(1) Positioning

*Baby Think It Over*<sup>TM</sup> likes to be held in certain positions. He/she is quite when on his/her back, right side, or placed upright. He/she may be carried in a chest carrier or held against your chest or shoulder. Although the baby won't cry if seated upright, please remember that a real newborn infant would need his/her head and neck supported. Your teacher can show you the proper way to do this. Doctors don't recommend putting babies on their stomachs to sleep, so do not put him/her on his/her stomach, and do not put his/her head in a downward position. If you do, the baby will cry. If someone else puts the baby in the wrong position, correct it quickly.

**Note.** Never lay your baby down on newsprint, magazines, or new colored clothing. The dyes in all of these can rub off on the baby's skin and are very difficult to remove. New blue jeans are especially likely to cause problems.

(2) Tending

At random intervals your baby will cry because he/she needs care. With a real baby this care could be feeding, diaper changing, and/or bathing. You will simulate all of those activities with the plastic probe that is strapped to your wristband. You will not actually be doing any of those things, but you must spend about the same amount of time that those activities would take, tending to your baby.

**Note.** It's okay to give the baby a "bath" with a slightly damp washcloth, but it's important not to let the electronics box inside the baby's back get wet. Never immerse the baby in water.

You will not know ahead of time when the baby will need tending, but you can tell that he/she does when he/she suddenly starts crying even though the baby is correctly positioned. The crying is a signal for you to pick the baby up, hold him/her in a normal feeding position, and insert the probe into the small hole in the electronics box in the baby's back. Push the probe in **GENTLY**, and **GENTLY** turn it clockwise. **THE PROBE WILL BREAK IF OVERTORQUED.** When the probe is positioned properly and if your baby is on his/her back or side, the crying will stop within three seconds. It is not necessary to push the probe in hard or to try to force it; be gentle.

As long as the baby needs attention and you hold the probe in place, the baby will not cry. But if you remove the probe too soon, he/she will start crying again. The feeding or care period can last as little as 5 minutes, as much as 35 minutes, or anywhere in between. The signal that the baby is finished is when he/she starts to cry again during

tending. This means that the tending session is over. Take out the probe and put the baby on his/her back or right side. He/she will be quiet until the next feeding/care period.

(3) **Rough Handling**

Babies need gentle treatment and your baby is no exception. If he/she is handled too roughly he/she will cry. Here are a few possible causes of rough handling:

- (1) dropping
- (2) throwing the baby in the air and catching him/her
- (3) other students deliberately hitting or throwing the baby
- (4) shaking

It's your job as a parent to protect your child. This means that you don't put your baby in dangerous situations. If you slip up and your baby is handled roughly, it will cry for 30 seconds and you will not be able to quiet it. Being a parent takes a lot of patience.

APPENDIX B  
**General Information Form**

1. Date of Birth (day/month/year): \_\_\_\_/\_\_\_\_/\_\_\_\_
2. Gender: male \_\_\_\_ female \_\_\_\_
3. Name of High School You Attend:  
\_\_\_\_\_
4. Have you ever been involved with the Teen Health Centre's *Baby Think It Over*<sup>TM</sup> program (Joey/Josephine dolls)?  
No \_\_\_\_  
Yes \_\_\_\_ If your response is yes, how long has it been since you last had any contact with the doll? \_\_\_\_\_
5. Have you ever attended any sex education classes?  
No \_\_\_\_  
Yes \_\_\_\_ If your response is yes, how long has it been since you attended the class? \_\_\_\_\_
6. Are you a teen parent?  
No \_\_\_\_  
Yes \_\_\_\_

**FOR FEMALES ONLY:**

7. Have you ever been pregnant?

No \_\_\_\_

Yes \_\_\_\_

**FOR MALES ONLY:**

8. As far as you know, have you ever gotten a girl pregnant?

No \_\_\_\_

Yes \_\_\_\_

## APPENDIX B

**Health Belief Model Approach to Adolescents' Fertility Control**

Carefully read each of the following statements and circle the response from those given, that best applies to you.

**(1) strongly agree**  
**(2) somewhat agree**  
**(3) not sure**  
**(4) somewhat disagree**  
**(5) strongly disagree**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. Sometimes it seems that when you try to prevent problems, it is more trouble than it's worth.            | 1 | 2 | 3 | 4 | 5 |
| 2. If my girl(boy)friend wanted to have sex but I didn't, I would find it pretty hard to say no.            | 1 | 2 | 3 | 4 | 5 |
| 3. A young girl's pregnancy can really hurt her parents.  | 1 | 2 | 3 | 4 | 5 |
| 4. If a guy has contraceptives available, a girl is more willing to agree to have sex.                      | 1 | 2 | 3 | 4 | 5 |
| 5. If you use it right away, contraception makes pregnancy less likely to happen.                           | 1 | 2 | 3 | 4 | 5 |
| 6. If a teenage girl has an unplanned pregnancy, it's not a big problem since she can raise her baby alone. | 1 | 2 | 3 | 4 | 5 |
| 7. The use of contraception improves a relationship.  | 1 | 2 | 3 | 4 | 5 |
| 8. The side effects of good birth control methods are a real problem.                                       | 1 | 2 | 3 | 4 | 5 |
| 9. An abortion is a pretty simple medical procedure but it can affect how you feel for a long time.         | 1 | 2 | 3 | 4 | 5 |
| 10. With STDs getting more common all the time, a teenager who worries about it is being realistic.         | 1 | 2 | 3 | 4 | 5 |

**(1) strongly agree**  
**(2) somewhat agree**  
**(3) not sure**  
**(4) somewhat disagree**  
**(5) strongly disagree**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 11. If a girl uses birth control, her partner will know that she really cares about herself.   | 1 | 2 | 3 | 4 | 5 |
| 12. There is not much point in using over-the-counter birth control methods (e.g. condoms, foam) – they really aren't that good at preventing pregnancy. | 1 | 2 | 3 | 4 | 5 |
| 13. If I wanted to get a good method of birth control, I know where to get it.   | 1 | 2 | 3 | 4 | 5 |
| 14. Even though a girl may not think so now, becoming a teenage mother can make it very hard to do all she'd like to later in life.                      | 1 | 2 | 3 | 4 | 5 |
| 15. I would feel pretty comfortable talking to a sexual partner about birth control.   | 1 | 2 | 3 | 4 | 5 |
| 16. It's always a good idea to carry contraceptives because then you can always have protected intercourse.  | 1 | 2 | 3 | 4 | 5 |
| 17. I believe contraception is an important part of responsible sexual behavior.   | 1 | 2 | 3 | 4 | 5 |
| 18. Unplanned pregnancy is not worth worrying a lot about because it can be taken care of pretty easily with an abortion.                                | 1 | 2 | 3 | 4 | 5 |
| 19. Most teenage couples who don't use contraceptives wind up with an unplanned pregnancy.   | 1 | 2 | 3 | 4 | 5 |
| 20. Using a contraceptive to prevent unplanned pregnancy is a good thing to do.  | 1 | 2 | 3 | 4 | 5 |
| 21. You can feel pretty sure that you won't get pregnant if you use contraception every time you have sex.   | 1 | 2 | 3 | 4 | 5 |

**(1) strongly agree**  
**(2) somewhat agree**  
**(3) not sure**  
**(4) somewhat disagree**  
**(5) strongly disagree**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 22. I have no religious or moral objection to contraception.   | 1 | 2 | 3 | 4 | 5 |
| 23. The use of contraceptives makes sexual intercourse seem dirty.   | 1 | 2 | 3 | 4 | 5 |
| 24. Getting married may seem like an easy way to solve an unplanned pregnancy, but a teenage marriage may be more trouble than it's worth. | 1 | 2 | 3 | 4 | 5 |
| 25. If a male uses birth control, his partner knows that he really cares about her.  | 1 | 2 | 3 | 4 | 5 |
| 26. The whole idea of birth control is embarrassing to me.   | 1 | 2 | 3 | 4 | 5 |
| 27. It can sometimes be important to show your love by taking a chance on getting pregnant.  | 1 | 2 | 3 | 4 | 5 |
| 28. If a girl uses birth control, her partner will think she is pretty smart.  | 1 | 2 | 3 | 4 | 5 |
| 29. Having contraceptives with you makes sexual intercourse seem less romantic and exciting.   | 1 | 2 | 3 | 4 | 5 |
| 30. If a guy gets a girl pregnant, it's not a big problem since the partners can always get married.                                       | 1 | 2 | 3 | 4 | 5 |
| 31. If a guy makes sure that one of them is using contraceptives, his partner will know that he really cares about her.                    | 1 | 2 | 3 | 4 | 5 |
| 32. Even though an abortion may be pretty easy to get, the decision to have one is often difficult and painful.                            | 1 | 2 | 3 | 4 | 5 |

**For questions #33 and #34, use the following response options:**

- (1) very worried**
- (2) somewhat worried**
- (3) slightly worried**
- (4) not at all worried**
- (5) not sure**

33. If you had unprotected sex, how worried would you be that you or your partner might get an STD?      1      2      3      4      5
34. If you had unprotected sex, how worried might you be if you or your partner got pregnant?      1      2      3      4      5

**For question #35 use the following response options:**

- (1) very likely**
- (2) somewhat likely**
- (3) somewhat unlikely**
- (4) very unlikely**

35. If you or your partner used no contraceptives, how likely is it that you or your partner would become pregnant?      1      2      3      4



## APPENDIX B

**Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraceptives**

Carefully read each of the following statements and circle the response from those provided that best applies to you.

**1 = Strongly Agree**  
**2 = Agree Somewhat**  
**3 = Not Sure**  
**4 = Disagree Somewhat**  
**5 = Strongly Disagree**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. It is okay to have intercourse without birth control, as long as it doesn't happen very often.             | 1 | 2 | 3 | 4 | 5 |
| 2. Using a method of birth control would make me feel bad about myself.                                       | 1 | 2 | 3 | 4 | 5 |
| 3. I would prefer to wait until I am older to begin having sex.   | 1 | 2 | 3 | 4 | 5 |
| 4. Sometimes if a method of birth control is not available, I might have sex anyway.                          | 1 | 2 | 3 | 4 | 5 |
| 5. The trouble with using birth control is that it makes it look like you are planning ahead to have sex.     | 1 | 2 | 3 | 4 | 5 |
| 6. If I have sex, I probably wouldn't worry about me or my partner getting pregnant.                          | 1 | 2 | 3 | 4 | 5 |
| 7. It is important to wait until marriage to begin having sexual intercourse.                                 | 1 | 2 | 3 | 4 | 5 |
| 8. I would prefer to leave it up to the guy [girl] to take precautions so that I [she] wouldn't get pregnant. | 1 | 2 | 3 | 4 | 5 |
| 9. Birth control methods are too much trouble.  | 1 | 2 | 3 | 4 | 5 |
| 10. I really won't need to use a method of birth control every time I have sex until I am older.              | 1 | 2 | 3 | 4 | 5 |

**1 = Strongly Agree**  
**2 = Agree Somewhat**  
**3 = Not Sure**  
**4 = Disagree Somewhat**  
**5 = Strongly Disagree**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 11. I think it is okay to have sex because my friends are doing it.  | 1 | 2 | 3 | 4 | 5 |
| 12. There are times when I might prefer to take a chance at getting [ my girlfriend ] pregnant, rather than use birth control. | 1 | 2 | 3 | 4 | 5 |
| 13. It is good to be sexually experienced before marriage.   | 1 | 2 | 3 | 4 | 5 |
| 14. Sex without birth control is more natural.   | 1 | 2 | 3 | 4 | 5 |
| 15. There is not much to do to be sure that I [ my girlfriend ] won't get pregnant.  | 1 | 2 | 3 | 4 | 5 |

## APPENDIX B

**Sexual/Contraceptive Behaviours Questionnaire**

1. At this time, are you sexually active?      Yes \_\_\_\_      No \_\_\_\_
2. Have you ever had sex?    Yes \_\_\_\_      No \_\_\_\_    (If "No", **DO NOT** continue with the rest of this section).
3. On average, how many times per month do you have sex? \_\_\_\_\_ times per month
4. How often do you use birth control when you have sex? Please circle one of the following:
  - (a) Never
  - (b) 25 % of the time
  - (c) 50 % of the time
  - (d) 75 % of the time
  - (e) Always
5. Circle any of the following which you usually use for birth control:
  - (a) birth control pill
  - (b) condoms
  - (c) withdrawal
  - (d) rhythm method
  - (e) nothing – do not use birth control
  - (f) other (please list): \_\_\_\_\_
6. What age were you when you first had sex? \_\_\_\_\_ years
7. Did you use birth control the first time you had sex?      Yes \_\_\_\_      No \_\_\_\_
8. Have you had sex without using birth control? (Please circle the response that applies to you):
  - (a) never
  - (b) only once
  - (c) sometimes
  - (d) usually
  - (e) always
9. How many sexual partners have you had? \_\_\_\_\_ (number of partners)

## APPENDIX B

**New Imaginary Audience Scale**

How often do you daydream about, or imagine yourself to be in the following situations?  
In order to tell us how often you think about these situations, circle the number of the response that applies to you.

	<b>(1) NEVER</b> <b>(2) HARDLY EVER</b> <b>(3) SOMETIMES</b> <b>(4) OFTEN</b>			
1. Winning a lot of money	1	2	3	4
2. Being a rock star	1	2	3	4
3. Being a movie or TV star	1	2	3	4
4. Winning an important game for your team	1	2	3	4
5. Being popular with friends	1	2	3	4
6. Being admired for the way you look	1	2	3	4
7. Being a good athlete	1	2	3	4
8. Being admired because of the way you dress	1	2	3	4
9. Being an important leader	1	2	3	4
10. Performing in front of your school in a play	1	2	3	4
11. Being admired because of how smart you are	1	2	3	4
12. Having a popular boyfriend or girlfriend	1	2	3	4
13. Rescuing a friend from danger	1	2	3	4
14. Saving someone's life	1	2	3	4
15. Standing up to a bully	1	2	3	4

	<b>(1) NEVER</b> <b>(2) HARDLY EVER</b> <b>(3) SOMETIMES</b> <b>(4) OFTEN</b>			
16. Winning an important award	1	2	3	4
17. Showing others that you are strong	1	2	3	4
18. Imagining how others would feel if you were gone	1	2	3	4
19. Showing others that you are kind and friendly	1	2	3	4
20. Having a lot of friends	1	2	3	4
21. Getting your feelings hurt in public	1	2	3	4
22. Making people sorry for hurting you	1	2	3	4
23. Getting back at an enemy	1	2	3	4
24. Developing a friendship with someone who doesn't like you	1	2	3	4
25. Imagining how others would feel if you were in the hospital	1	2	3	4
26. Imagining how others would feel if you lost your mother or father	1	2	3	4
27. Giving an important speech	1	2	3	4
28. Being rejected by a boyfriend or girlfriend	1	2	3	4
29. Being admired because you are funny	1	2	3	4
30. Being admired because of the car you have or want to have	1	2	3	4
31. Being admired because of your CDs or stereo system	1	2	3	4

	<b>(1) NEVER</b> <b>(2) HARDLY EVER</b> <b>(3) SOMETIMES</b> <b>(4) OFTEN</b>			
32. Imagining what others are thinking about the way you look	1	2	3	4
33. Asking a popular boy or girl out for a date	1	2	3	4
34. What it's like to be married	1	2	3	4
35. Making a good impression on others	1	2	3	4
36. Imagining what everyone will think if you become famous	1	2	3	4
37. Other people seem to enjoy it when I am the center of attention	1	2	3	4
38. Thinking about who would come to your funeral and what would be going through his/her mind	1	2	3	4
39. Imagining if other people think you are attractive	1	2	3	4
40. Being admired for being "cool"	1	2	3	4
41. Wondering what it would be like to have special powers	1	2	3	4
42. Performing in front of your school in a band	1	2	3	4

## APPENDIX B

### New Personal Fable Scale

Carefully read the following statements that describe the different things that people believe about themselves. Circle the response “T” (TRUE) or “F” (FALSE) that best matches the beliefs that you have about yourself.

**T = TRUE**  
**F = FALSE**

- |  |          |
|--|----------|
| 1. I believe that I can do anything I set my mind to.                  | T      F |
| 2. Nothing seems to really bother me.                                  | T      F |
| 3. No one has the same thoughts or feelings that I have.               | T      F |
| 4. I think I am more persuasive than my friends.                       | T      F |
| 5. I believe that no one can stop me if I really want to do something. | T      F |
| 6. I am somehow different from everyone else.                          | T      F |
| 7. It often seems like everything I do turns out great.                | T      F |
| 8. I don't think anyone will stand in the way of my goals.             | T      F |
| 9. I'm the only one that can understand me.                            | T      F |
| 10. I believe that other people control my life.                       | T      F |
| 11. I don't believe in taking chances.                                 | T      F |
| 12. I believe that I am unique.  | T      F |
| 13. I think I can be anything I want to be.                            | T      F |
| 14. I am a fragile person.   | T      F |
| 15. I think that deep down everybody is the same.                      | T      F |
| 16. I believe that everything I do is important.                       | T      F |

**T = TRUE**  
**F = FALSE**

- |   |   |   |
|---|---|---|
| 17. I believe in knowing how something will turn out before I try it.     | T | F |
| 18. I am just like everyone else.   | T | F |
| 19. I think I'm a powerful person.  | T | F |
| 20. I believe in taking risks.  | T | F |
| 21. Everybody goes through the same things that I am going through.       | T | F |
| 22. I think that I'm better than my friends are at just about everything. | T | F |
| 23. I tend to doubt myself a lot.   | T | F |
| 24. It's hard for me to tell if I am different from my friends.           | T | F |
| 25. I often feel that I am insignificant and that I don't really matter.  | T | F |
| 26. Other people don't influence me.                                      | T | F |
| 27. There isn't anything special about me.                                | T | F |
| 28. I often think that people don't listen to what I have to say.         | T | F |
| 29. There are times when I think that I am indestructible.                | T | F |
| 30. I honestly think I can do things that no one else can.                | T | F |
| 31. I can get away with things that other people can't.                   | T | F |
| 32. Everybody knows that I am a leader.                                   | T | F |
| 33. Nobody will ever know what I am like.                                 | T | F |
| 34. No one sees the world the way I do.                                   | T | F |
| 35. It is impossible for people to hurt my feelings.                      | T | F |
| 36. People always do what I tell them to do.                              | T | F |



**T = TRUE**  
**F = FALSE**

- |  |   |   |
|--|---|---|
| 37. People usually wait to hear my opinion before making a decision.                     | T | F |
| 38. I usually let my friends decide what we are going to do.                             | T | F |
| 39. My feelings are easily hurt.   | T | F |
| 40. Special problems, like using drugs or becoming pregnant<br>could never happen to me. | T | F |
| 41. I enjoy taking risks.  | T | F |
| 42. It is easy for me to take risks because I never get hurt.                            | T | F |
| 43. I don't take chances because I usually get into trouble.                             | T | F |
| 44. I am always in control.  | T | F |
| 45. I am not afraid to do dangerous things.  | T | F |
| 46. Sometimes I think that no one really understands me.                                 | T | F |

**APPENDIX B****Open Ended Question**

1. Try to imagine waking up tomorrow morning to find out that you have “suddenly” become a parent. Identify ways in which your life might be the same or different. Write your answer in the space below.

2. How hard was it for you to imagine yourself as a teen parent? (Please circle your response).

- 1 = easy to imagine**
- 2 = somewhat hard to imagine**
- 3 = very hard to imagine**
- 4 = impossible to imagine**

## APPENDIX C

**Principal's Consent Form**

Researchers at the University of Windsor and at the Teen Health Centre are interested in assessing the effectiveness of pregnancy prevention programs aimed at secondary school students. In particular, we are interested in assessing the effectiveness of the ***Baby Think It Over***<sup>TM</sup> program which is currently being used in conjunction with parenting and/or sex education classes taught by teachers in both Windsor Public and Separate School systems.

The Ethics Committee of the University of Windsor requires that signed consent from any institutions involved in the study (schools, businesses, residences, etc...) be obtained prior to submission of the research proposal for review. In order to proceed with the research, signed consent of those principals who wish to participate in the study must be obtained prior to submission for ethics review. Please read the attached methodology page and sign below if you agree to allow the students in your school to participate in this study. Please note that at any time during the course of the study, you may change your mind about allowing the students at your school to participate in this research, even after the consent form has been signed.

If you have any questions about the study, the researchers can be contacted at the phone numbers listed below.

Thank you for your consideration,

**Principal Researcher**

Jennifer W. Out, B.Sc., B.A. (Hons.)  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2220

**Faculty Advisor**

Kathryn D. Lafreniere, Ph.D.  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext.2233

**I have read the information attached and I consent to allow students from**

\_\_\_\_\_ **to participate in this project.**  
*(Name of School)*

**Signed:** \_\_\_\_\_  
*(Principal)*

**Date:** \_\_\_\_\_

## APPENDIX D

### **Parental Consent Form (Intervention Group)**

Researchers at the University of Windsor are interested in assessing the effectiveness of pregnancy prevention programs aimed at secondary school students. In particular, we are interested in assessing the effectiveness of the *Baby Think It Over*<sup>TM</sup> program which is currently being used in conjunction with parenting and/or sex education classes taught by teachers in both Windsor Public and Separate School systems.

The *Baby Think It Over*<sup>TM</sup> program involves the use of a computerized doll to teach adolescents about the responsibilities of parenthood. The doll was developed by Rick Jurmain, an aerospace engineer in California. It contains a small microcomputer in its back that simulates the realistic cry of an infant at random intervals of 15 minutes to 6 hours for feeding or care 24 hours a day. "Feeding" the baby demands that the adolescent insert a probe into the doll's back, holding it in place for up to 35 minutes. The probe is attached to a tamper-proof hospital bracelet worn on the teen's wrist. Several of these dolls have been purchased by both Windsor Public and Separate School Boards and are being used in parenting classes at several high schools throughout the city.

To assess the effectiveness of this program we have developed the following study which basically consists of three parts:

During the first part of the study (pre-test), students as a class/group will be asked to complete a questionnaire to assess their attitudes, behaviors, and knowledge with respect to contraception and fertility, as well as their general level of cognitive development.

During the second part of the study, students will be assigned specific dates (ranging from two days and two nights to three days and three nights) during which time they will assume responsibility for the care of the "simulated infant." Prior to receiving the doll, students will receive detailed instructions both verbally and in print regarding care of the doll. Magnetic probes, which are used to stop the doll's crying, will be attached to the student's wrist with a tamper-proof hospital band.

The third and final part of the study occurs following return of the doll on the assigned date, when the student will once again be asked to fill out a questionnaire similar to the one used in the first part of the study.

To assure anonymity, students will **NOT** be asked to list their names anywhere on the questionnaires, however students will be asked to list their date of birth on the questionnaires for the sole purpose of linking pre- and post-test data. Strict confidentiality will be maintained at all times throughout the study. Although students will be told they may choose to skip any questions that they do not wish to answer, they will be encouraged to complete as many of the questionnaire items as possible for statistical purposes. Students will also be informed both verbally and in the student consent form that they may terminate their participation in the study at any time.

This research has been cleared by the Ethics Committee of the Psychology Department, University of Windsor. Any concerns about the ethics or procedures of this investigation may be directed to: Dr. Sylvia Voelker, Chair, Ethics Committee, Dept. of Psychology, University of Windsor, (519) 253-4232 ext. 2249.

If you have any questions about this study, the researchers can be contacted at the phone numbers listed below.

Thank you for your consideration,

**Principal Researcher**

Jennifer W. Out, B.Sc., B.A. (Hons.)  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2220

**Faculty Advisor**

Kathryn D. Lafreniere, Ph.D.  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2233

**I have read the information attached and I consent to allow my son/daughter**

\_\_\_\_\_ **(please print) to participate in this project.**

**I agree to accept financial responsibility and to reimburse:**

\_\_\_\_\_ **in the amount of**  
*(Name of School)*

\_\_\_\_\_ **if the doll is lost, damaged, or destroyed.**

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Parent/Guardian)*

## APPENDIX E

### **Participant Consent Form (Intervention Group)**

Researchers at the University of Windsor and at the Teen Health Centre are interested in assessing the effectiveness of pregnancy prevention programs for secondary school students. In particular, we are interested in assessing the effectiveness of the *Baby Think It Over*<sup>TM</sup> program which is being used in parenting and/or sex education classes being taught by teachers at your school.

The study basically consists of three parts:

During the first part of the study, you will be asked to complete a questionnaire during class time, along with the rest of your class. The questionnaire contains items that will ask you about your attitudes, behaviours, and knowledge with respect to contraception and fertility.

During the second part of the study, you will be assigned a specific time to care for the “baby” (ranging from a minimum of two days and two nights to a maximum of three days and three nights). Prior to receiving the baby, your teacher will give you instructions both verbally and in writing to help you take care of the doll. A magnetic probe, which is used to stop the doll’s crying, will be attached to your wrist using a hospital band.

The third and final part of the study occurs when you return the doll on the assigned date. You will once again be asked to fill out a questionnaire similar to the one used in the first part of the study.

It is important that you understand that you will **NOT** be asked to put your name anywhere on the questionnaires. However, you will be asked to list your date of birth for the sole purpose of keeping track of the data. Strict confidentiality will be maintained at all times throughout the study – this means that **NO ONE** other than the principal researcher (J.W. Out) or faculty advisor (Dr. K. Lafreniere) will see your completed questionnaires. Although you may choose to skip any questions that you do not wish to answer, you will be encouraged to answer as many items as possible for statistical purposes. You may also end your participation in the study at any time.

The questionnaire will take about 50-60 minutes to complete. In total, you will miss not more than two classes to complete the questionnaires. Bonus points may be awarded at the discretion of your classroom teacher for participation in this study.

This study has been cleared by the Ethics Committee of the Psychology Department, University of Windsor. Any concerns or questions about the ethics or procedures of this study may be directed to: Dr. Sylvia Voelker, Chair, Ethics Committee, Dept. of Psychology, University of Windsor, (519) 253-4232 ext. 2249.

If you have any questions about the study, the researchers can be contacted at the phone numbers listed below.

Thanks again for your help,

**Principal Researcher**

Jennifer W. Out, B.Sc., B.A. (Hons.)  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2220

**Faculty Advisor**

Kathryn D. Lafreniere, Ph.D.  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2233

**I have read and understood the attached information and agree to participate in this study.**

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## APPENDIX F

### **Parental Consent Form (Comparison Group)**

Researchers at the University of Windsor are interested in assessing the effectiveness of pregnancy prevention programs aimed at secondary school students. In particular, we are interested in assessing the effectiveness of the *Baby Think It Over*<sup>TM</sup> program which is currently being used in conjunction with parenting and/or sex education classes taught by teachers in both Windsor Public and Separate School systems.

The *Baby Think It Over*<sup>TM</sup> program involves the use of a computerized doll to teach adolescents about the responsibilities of parenthood. The doll was developed by Rick Jurmain, an aerospace engineer in California. It contains a small microcomputer in its back that simulates the realistic cry of an infant at random intervals of 15 minutes to 6 hours for feeding or care 24 hours a day. "Feeding" the baby demands that the adolescent insert a probe into the doll's back, holding it in place for up to 35 minutes. The probe is attached to a tamper-proof hospital bracelet worn on the teen's wrist. Several of these dolls have been purchased by both Windsor Public and Separate School Boards and are being used in parenting classes at several high schools throughout the city.

To assess the effectiveness of this program, not only will we need information from students directly involved with the doll, but we will also need information from students who have not yet had experience with *Baby Think It Over*<sup>TM</sup>. This latter group of students (which includes your son/daughter) will be asked as part of their \_\_\_\_\_ class to complete a questionnaire to assess their attitudes, behaviors, and knowledge with respect to contraception and fertility, as well as their general level of cognitive development.

To assure anonymity, students will **NOT** be asked to list their names anywhere on the questionnaires, however students will be asked to list their date of birth on the questionnaires for the sole purpose of linking pre- and post-test data. Strict confidentiality will be maintained at all times throughout the study. Although students will be told they may choose to skip any questions that they do not wish to answer, they will be encouraged to complete as many of the questionnaire items as possible for statistical purposes. Students will also be informed both verbally and in the student consent form that they may terminate their participation in the study at any time.

This research has been cleared by the Ethics Committee of the Psychology Department, University of Windsor. Any concerns about the ethics or procedures of this investigation may be directed to: Dr. Sylvia Voelker, Chair, Ethics Committee, Dept. of Psychology, University of Windsor, (519) 253-4232 ext. 2249



If you have any questions about this study, the researchers can be contacted at the phone numbers listed below.

Thank you for your consideration,

**Principal Researcher**

Jennifer W. Out, B.Sc., B.A. (Hons.)  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2220

**Faculty Advisor**

Kathryn D. Lafreniere, Ph.D.  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2233

**I have read the information attached and I consent to allow my son/daughter**

\_\_\_\_\_ **(please print) to participate in this project.**

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Parent/Guardian)*

## APPENDIX G

### **Participant Consent Form (Comparison Group)**

Researchers at the University of Windsor and at the Teen Health Centre are interested in assessing the effectiveness of pregnancy prevention programs for secondary school students. In particular, we are interested in assessing the effectiveness of the *Baby Think It Over*<sup>TM</sup> program which is being used in parenting and/or sex education classes being taught by teachers at your school.

To assess the effectiveness of this program, not only will we need information from students directly involved with *Baby Think It Over*<sup>TM</sup>, but we will also need information from students who have NOT yet had any experience with the program. As part of this study, you will be asked to complete a questionnaire during class time, along with the rest of your class. The questionnaire contains items that will ask about your attitudes, behaviors, and knowledge with respect to contraception and fertility.

It is important that you understand that you will **NOT** be asked to put your name anywhere on the questionnaires. However, you will be asked to list your date of birth for the sole purpose of keeping track of the data. Strict confidentiality will be maintained at all times throughout the study – this means that **NO ONE** other than the principal researcher (J.W. Out) or faculty advisor (Dr. K. Lafreniere) will see your completed questionnaires. Although you may choose to skip any questions that you do not wish to answer, you will be encouraged to answer as many items as possible for statistical purposes. You may also end your participation in the study at any time.

The questionnaire will take about 50-60 minutes to complete. In total, you will miss not more than two classes to complete the questionnaires. Bonus points may be awarded at the discretion of your classroom teacher for participation in this study.

This study has been cleared by the Ethics Committee of the Psychology Department, University of Windsor. Any concerns or questions about the ethics or procedures of this study may be directed to: Dr. Sylvia Voelker, Chair, Ethics Committee, Dept. of Psychology, University of Windsor, (519) 253-4232 ext. 2249. If you have any questions about the study, the researchers can be contacted at the phone numbers listed below. Thanks again for your help,

**Principal Researcher**  
Jennifer W. Out, B.Sc., B.A. (Hons.)  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2220

**Faculty Advisor**  
Kathryn D. Lafreniere, Ph.D.  
Department of Psychology  
University of Windsor  
Tel. (519) 253-4232 ext. 2233

**I have read and understood the attached information and agree to participate in this study.**

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

### VITA AUCTORIS

Jennifer W. Out was born on June 1st, 1972 in Windsor, Ontario, Canada. In June of 1990 she graduated from F.J. Brennan Catholic High School in Windsor, Ontario.

Jennifer then pursued her post secondary education at the University of Windsor where she graduated with a Bachelor of Science degree in Biology in 1995 and a Bachelor of Arts (Honours) degree in Psychology in 1996. She has been enrolled in the doctoral program in adult clinical psychology at the University of Windsor since September, 1996.